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ABSTRACT

Recent declines in funding for contraceptive services have led to questions regarding the role of contraceptive services and social policy in shaping adolescent reproductive behavior. This 2-year study examined the impact of state-level policies on adolescent pregnancy and fertility. Data were obtained from a variety of sources, including the Guttmacher Institute and the Department of Health and Human Services. Among the findings are the following: (1) greater state public funding for contraceptive services predicts lower adolescent fertility and lower non-marital fertility; (2) state public abortion funding is associated with lower childbearing rates, particularly for African-American teens, and with higher abortion rates; (3) state laws restricting minors' abortion availability are unrelated to teen birth rates, abortion rates, or teen pregnancy resolution; (4) coordinated state-level pregnancy prevention programs in 1985 predicted lower 1988 pregnancy rates; (5) states with higher teen poverty had higher non-marital teen childbearing rates; (6) AFDC benefits were weakly associated with higher White unmarried teen childbearing but not African-American teen childbearing; (7) the proportion of the White population that is Hispanic is associated with higher nonmarital birth rates among White teens 15-17; however, the proportion of the state population that is African-American does not influence the rates of teen fertility among Blacks; (8) the proportion of Blacks who are college-educated significantly influenced childbearing rates and non-marital childbearing among Black teens; (9) social disorganization was correlated with teen childbearing, pregnancy, and abortion; (10) the proportion of fundamentalists contributed to fewer non-marital births and fewer abortions among White teens; (11) women's labor force participation was related to higher teen childbearing; and (12) prior fertility was the strongest predictor of later teen fertility. (Thirty-five tables detail results. Contains 56 references.) (Author/KB)

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State Variation in Rates of Adolescent Pregnancy and Childbearing

March, 1994

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Final Report to the Charles Stewart Mott
Foundation, Flint, MI

PS 026249

**STATE VARIATION IN RATES OF
ADOLESCENT PREGNANCY AND CHILDBEARING**

by:

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Executive Summary

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STATE VARIATION IN RATES OF ADOLESCENT PREGNANCY AND CHILDBEARING

EXECUTIVE SUMMARY

Sexual activity, pregnancy, abortion, and childbearing in the adolescent population are among the most intensely debated topics on the public policy agenda. Over the past decade, the proportion of teens who have had sexual intercourse has increased, as has the number of births to teens. Between 1986 and 1991, the teen birth rate increased by 24 percent¹, with increases in the birth rate occurring among both younger and older teens, in nearly all states across the nation, and among non-Hispanic whites, non-Hispanic blacks and Hispanics. Increases in sexual activity and early childbearing are troubling for at least two reasons. First, early pregnancy and childbirth are associated with a variety of social and economic difficulties for the mother and child, their families, and for society. Second, early sexual activity increases exposure to sexually transmitted diseases and infection from HIV.

Few Americans feel that childbearing among adolescents is desirable, yet public efforts to encourage youths to postpone sex and to prevent pregnancy and other sequelae of sexual activity have not been especially promising. Rigorous evaluations of existing programs and policies are limited, but among those that have been assessed, few demonstrate large or long-term impacts on sexual or contraceptive behavior. Furthermore, public funding for contraceptive services declined by 30 percent during the 1980s.² In fact, net of inflation, 37 states experienced a 50 percent or greater decline in public funding for contraceptive services per woman at risk of unintended pregnancy between 1979 and 1990.³ In response to fewer resources, many providers have opted to reduce the scope of services offered and have even eliminated certain services.⁴

These changes have called into question the efficacy of social policy and the role of contraceptive services in shaping adolescent reproductive behavior. Yet, while nearly all states witnessed an increase in the number of births to teens, considerable variation in adolescent fertility across states still exists. For example, births per 1000 adolescent females ranged from 34 in New Hampshire to 82 in Mississippi in 1990. One might therefore ask what factors are associated with this variation in rates of teen fertility. In particular, are there differences in state policy that contribute to the variations in the levels of teenage fertility that one observes?

In this study, associations are found between the overall funding for family planning services in states and lower levels of adolescent fertility. In addition, public funding for abortion in states is associated with lower teen birth rates, particularly among African American teens. Social and economic characteristics of the states are also strongly related to teen fertility. The effects of family planning and abortion funding hold over and above the effects of socioeconomic differences across states.

State Variation in Rates of Adolescent Pregnancy and Childbearing was a two-year research effort conducted to learn more about state-level policies and their impact on adolescent pregnancy and fertility at the state-level. Through the generous support of the Charles Stewart Mott Foundation, the project was designed to address the lack of up-to-date population-based studies on the impact of family planning policy and programs on fertility outcomes among youth. The specific goal of the project was to develop state-level measures of teen fertility and state-level measures of family planning availability and policies, along with social and economic indicators such as education and women's labor force participation, and then to examine which of these factors, if any, contribute to the state-level variations in teen fertility that are observed. In addition, because family planning services tend to be located in areas with the greatest need for contraceptive care, measures

of teen fertility in earlier years were also developed to control for varying levels of existing adolescent fertility. Family planning policy measures include: the percentage of teens at risk of unintended pregnancy served at Title X clinics, public expenditures on contraceptive services per woman at risk, abortion policies, AFDC benefit levels, and the presence of a state focus on adolescent pregnancy. Because of racial differences in rates of adolescent fertility, analyses of birth rates were conducted separately for blacks and whites.

Data for the study were obtained from a wide variety of sources, including the Natality Branch of the National Center for Health Statistics, the U.S. Bureau of the Census, the Alan Guttmacher Institute, and the Office of Population Affairs of the Public Health Service in the U.S. Department of Health and Human Services. A full description of our data sources is available in Appendix A of our final project report.

MAIN FINDINGS

State funding and policies for family planning

- *Greater overall public funding for contraceptive services in a state per woman at risk, predicts lower rates of adolescent fertility and lower rates of non-marital fertility among teens. However, funding for contraception does not affect pregnancy resolution for teens.*

Total public expenditures on contraceptive services (including Medicaid, Title X of the Public Health Services Act, and state funds) per woman at risk of unintended pregnancy, net of socioeconomic differences and differences in prior rates of teen fertility across states, predict lower rates of non-marital childbearing among young white and young black teens, and it predicts a lower total birth rate for white teens. It has no association with the total teen birth rate for blacks or with rates of pregnancy for all adolescent females. In addition, among teens who become pregnant, funding for contraception is unrelated to whether teens resolve pregnancy in abortion or birth. On the other hand, a more narrow measure of the proportion of teens at risk of unintended pregnancy who were served at Title X clinics was not related to lower adolescent fertility. By 1990, family planning funds provided under Title X of the Public Health Services Act accounted for only 22 percent of all public funds allocated to family planning, which may account for the absence of impact for this more narrow variable.

- *Public funding for abortion in states is associated with lower rates of childbearing, particularly among African American teens, and higher abortion rates.*

Availability of public funding for abortion is associated with fewer births among teens, particularly non-marital teen births and births among black teens. Funding for abortion is associated with a greater use of abortion among teens.

- ▶ *State laws restricting the availability of abortion to minors are unrelated to teen birth rates, abortion rates, or how teens choose to resolve their pregnancies.*

State laws limiting access to abortion for minors are not related to the level of fertility among teens, their use of abortion, or pregnancy resolution.

- ▶ *Coordinated state-level pregnancy prevention programs in 1985 predict lower pregnancy rates in 1988. Other state-level programs or policies related to family planning, such as school-based pregnancy prevention education programs, state-funded school-based clinics, or policies regarding AIDS or STD education, are not related to rates of childbearing, pregnancy, or abortion among teens.*

A measure indicating the presence or absence in a state of a coordinated program or policy for adolescent pregnancy prevention in 1985 was associated with lower pregnancy rates among teens in 1988. Other measures assessing the presence of state policy initiatives generally were not found to have an association with adolescent fertility. For example, the presence of a pregnancy prevention program in schools, or the presence of state-funded school-based clinics were not significantly related to rates of childbearing, pregnancy or abortion. These measures may have limited effects because they do not capture the intensity of these initiatives. These findings may also reflect the tendency of states with more serious problems to establish programs and policies to address teen fertility.

Economic and demographic context within the state

- ▶ *A state's economic climate has a strong impact on adolescent fertility. States with a high level of teen poverty demonstrate higher rates of non-marital childbearing among adolescents.*

Before controlling for prior teen fertility in a state, states with higher poverty rates have higher birth rates in general. When prior teen fertility is taken into account, the effect of poverty diminishes. Nonetheless, a higher incidence of poverty is weakly associated with a higher proportion of pregnancies ending in a non-marital birth, and fewer ending in abortion. However, among white teens, a higher poverty rate is weakly associated with fewer non-marital births.

- ▶ *Average annual pay for persons in a state and the proportion of households receiving AFDC are not related to fertility among teens, net of other factors. The level of AFDC benefits, however, is weakly associated with higher rates of childbearing among white teens and young unmarried white teens; no impact on rates of childbearing among African American teens was observed.*

Neither the average annual pay for persons in the state, nor the proportion of households receiving AFDC in the state were found to have an association with the likelihood of pregnancy or abortion among teens. On the other hand, larger AFDC payments in the state were found to be marginally associated with higher rates of white teen childbearing and non-marital childbearing among young white teens. However, no associations were found with rates of childbearing among black teens, with the abortion rate, or with the proportion of pregnancies ending in either abortion or in non-marital birth.

- ▶ *The proportion of the white population that is Hispanic in a state is associated with higher non-marital birth rates among white teens 15-17; however, the proportion of the state population that is African American does not influence the rates of teen fertility among blacks.*

Because rates of childbearing are higher among young people of color than white teens, it is important to consider the ethnic distribution of the state's population. Also, vital statistics data on births to whites include most Hispanic births. More than 90 percent of all Hispanics are defined as white, and the fertility patterns of Hispanic youth differ from those of non-Hispanic whites. Indeed, our analyses of the white teen birth rate indicate that a higher proportion of Hispanics in a state predicts higher non-marital birth rates among 15-17 year old white females. Variations in the proportion of the state population that is African American have no effect on birth rates among blacks. However, the proportion of pregnancies ending in non-marital births, which is calculated for teens of all races, is strongly related to the proportion of persons in a state who are African American.

Level of education within the state

- ▶ *The proportion of blacks who are college-educated among adults in a state significantly influences rates of childbearing and non-marital childbearing among African American teens. Fertility of white teens is unaffected by variations in educational levels of the white population across states.*

The proportion of college-educated white adults in the state population is unrelated to the fertility of white teenagers, but both the black teen birth rate and the non-marital birth rate among young black teens are lower when a higher proportion of the black population in the state is college educated. The proportion of the population who had completed high school in the state is unrelated to rates of teen pregnancy or pregnancy resolution among teens.

Social context within the state

- ▶ *Measures of social disorganization are correlated with higher rates of childbearing, pregnancy and abortion among teens.*

The rate of violent crime in 1988 was used as a proxy for the level of social disorganization in the state. States with a higher rate of violent crime also experience a higher birth rate among white teens, a higher non-marital birth rate among black teens, and higher rates of pregnancy and abortion for all teens.

- ▶ *The level of civic involvement in a state is associated with teen fertility, but the direction of the relation varies by race. The proportion of fundamentalists in a state contributes to fewer non-marital births among white teens, fewer abortions, and a lower proportion of pregnancies ending in non-marital births.*

Voting behavior is often regarded as an indicator of civic involvement and efficacy. States in which a high proportion of the population voted in the 1988 Presidential election demonstrated lower birth rates among white teens; however, the proportion voting is associated with a higher non-marital birth rate among young black teens. It is also associated with a higher proportion of teen pregnancies that terminate in non-marital

The proportion of the state population that was affiliated with a fundamentalist faith in 1990 (e.g., Churches of Christ, Latter-Day Saints, Southern Baptists, and Lutheran-Missouri Synod) is related to a lower rate of non-marital childbearing among young white teens. A greater proportion of fundamentalists in the state also predicts to a lower proportion of pregnancies ending in a non-marital birth and a lower proportion of pregnancies ending in abortion.

Female labor force participation

- *Rates of adolescent childbearing are higher in states where labor force participation among women is also high. Unemployment among women in a state is associated with a lower abortion rate and a lower propensity to abort given pregnancy.*

Higher rates of labor force participation among women are significantly related to higher rates of teenage childbearing among both white and black teens; however, the female unemployment rate is unrelated to rates of non-marital childbearing. High unemployment is related to lower pregnancy rates. However, given pregnancy, higher unemployment predicts a lower probability of abortion.

Prior rates of pregnancy, birth and abortion:

- *The prior teen birth rate in a state is the strongest and most consistent predictor of the 1990 birth rate in a state. Teen pregnancy rates and total abortion rates in 1985 are strongly predictive of 1988 rates of pregnancy and abortion.*

Prior fertility was shown to be a critical control variable: when this measure is included in our regression models, the positive association between several indicators, most notably services provided and the teen birth rate, becomes non-significant. States with relatively high birth rates in the mid-1980s retained their relative position in the late 1980s. A measure of the 1985 pregnancy rate is strongly predictive of the current pregnancy rate, and the prior abortion rate, as one would expect, is strongly predictive of the current abortion rate. In addition, the prior abortion rate is strongly predictive of the proportion of teen pregnancies that terminate in abortion as opposed to birth.

Quality of state-level data and statistics on teen fertility

- *Better data on Federal and state funding and policies are needed to support studies of policy and program outcomes.*

The capacity to carry out a strong study of the implications of public programs, policies, and funding on adolescent fertility is severely undermined by the inadequacies of the data currently available. In particular, appropriate data on family planning services, sex education, and child support were not found to be available. Moreover, because data on the proportion of teens in a state who are sexually active do not exist, it is not possible to control for this important confounding factor. Despite these weaknesses, the data suggest that social and economic disadvantages are associated with higher teen fertility, while greater funding for family planning and abortion are associated with lower teen fertility. With better data, a more precise understanding of this important issue may be forthcoming.

Endnotes:

1. Moore, K.A. and Snyder, N.O. (1994). "Facts-at-a-glance: 1991 Teen fertility in the United States." Washington, D.C.: Child Trends, Inc.
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3. Moore, K.A., Blumenthal, C., Sugland, B.W., Hyatt, B., Snyder, N.O., and Morrison, D.R. (1994). "State variation in rates of adolescent pregnancy and childbearing." Final report to the Charles Stewart Mott Foundation. Washington, D.C.: Child Trends.
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State Variation in Rates of Adolescent Pregnancy and Childbearing

Child Trends, Inc.

Child Trends, Inc. completed its final report on State Variation in Rates of Adolescent Pregnancy and Childbearing to the Charles Stewart Mott Foundation in March, 1994. Copies of that report are available from Child Trends, Inc. For further information or publications requests, contact: Child Trends, Inc., 4301 Connecticut Ave., N.W., Suite 100, Washington, D.C. 20008. (202)362-5580, or by FAX (202) 362-5533.

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State Variation in Rates of Adolescent Pregnancy and Childbearing

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Child Trends is a non-profit research firm that focuses on children and families. Established in 1979, with initial support from the Foundation for Child Development, Child Trends seeks to improve the quality, scope, and use of research and statistical information concerning America's children. Child Trends accomplishes this by:

- conducting basic research and evaluation studies on the factors that affect the development and well-being of children;
- educating the public, policy makers, and the media with respect to current trends in the circumstances of children's lives;
- improving the concepts and methods that guide research on the development and well-being of children in the United States, including the design and coordination of collaborative research projects in this field;
- fostering collaboration among social scientists and other professionals, including educators, medical researchers, policy makers and service providers to advance multidisciplinary approaches to understanding child development and well-being; and
- encouraging policy makers to use rigorous research and statistical information concerning children in the policy making process.

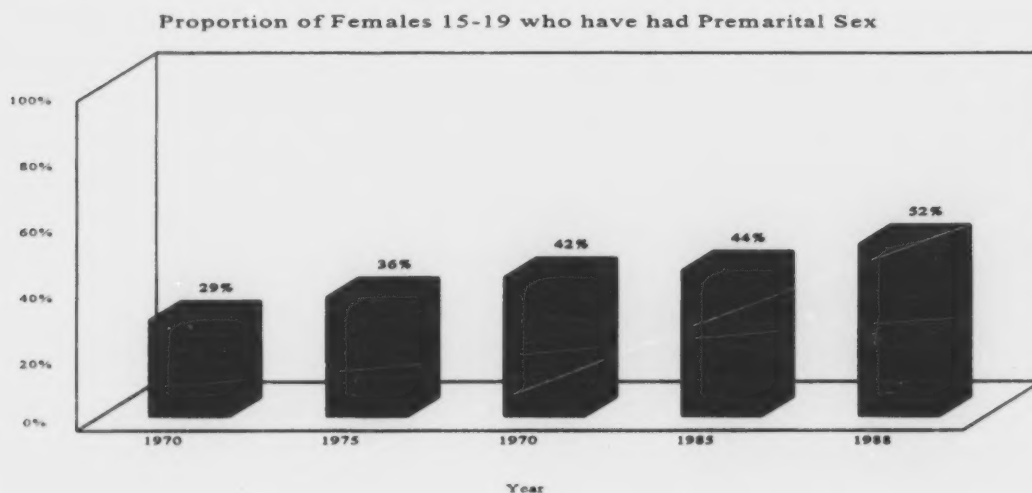
Child Trends employs a multidisciplinary research staff with expertise in social and developmental psychology, sociology, social demography, and public health. Child Trends maintains its own library of published materials, statistical reports and documents relating to children; and it disseminates numerous fact sheets, reports and papers as well as several compendia describing data on children and families. Requests for publications or further information may be directed to:

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CHAPTER 1: BACKGROUND

Sexual activity, pregnancy, abortion, and childbearing among teens are among the most intensely debated topics on the public policy agenda. The proportion of teens who are sexually active continued to climb during the 1980s (see Figure 1). Contraceptive use, particularly condom use, increased during the 1980s (Mosher, 1990), although improvements in contraceptive use have barely kept up with increases in teen sexual activity (Forrest and Singh, 1990, Trussell and Vaughan, 1991). Currently, more than a million pregnancies occur each year to teens, most of them unintended (Forrest and Singh, 1990). In addition, rates of birth among teens in the U.S. are higher than birth rates among teens in other developed countries (see Figure 2). Non-marital births among teens are also high, with 69 percent

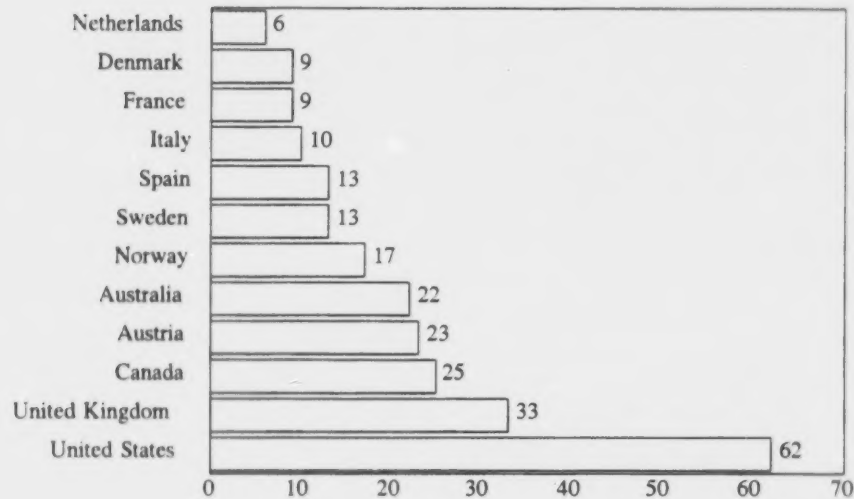
Figure 1



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Figure 2

Birth Rates to Teens Aged 15-19 for Selected Countries



of all births to teens occurring to unmarried teens. Moreover, the number of non-marital births (Figure 3) and the proportion of teen births that occur outside of marriage (Figure 4) are both continuing to rise. There are now substantially more non-marital births than marital births among teens -- 368,451 versus 163,140 in 1991.

The birth rate among U.S. teens 15-19 climbed 24 percent between 1986 and 1991, from 50 to 62 births per thousand females (Figure 5). This increase occurred among non-Hispanic whites and blacks as well as among Hispanics (Moore, 1994).

These trends are troubling because early pregnancy and childbirth are associated with a variety of social and economic difficulties. Because young mothers are more likely to be unmarried (National Center for Health Statistics, 1993) and to lack educational credentials, they more often face poverty,

and they are particularly likely to receive welfare assistance (Moore, Myers, Morrison, Nord, Brown, and Edmonston, 1993; Adams and Williams, 1990; Butler, 1992).

Figure 3

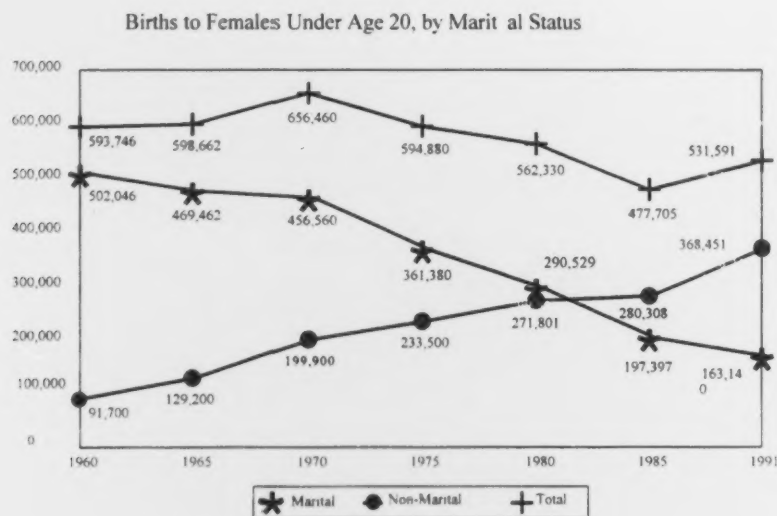


Figure 4

Percent of Teen Births That Occurred Outside of Marriage

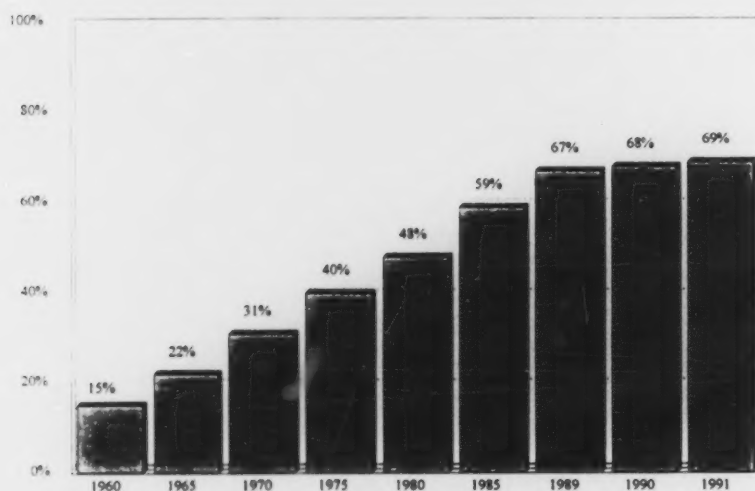


Figure 5



Not surprisingly, most Americans agree that it is desirable for youth to postpone childbearing beyond the teen years, and there is intense interest in developing policies and programs to persuade youth to postpone sex in order to prevent teen pregnancy as well as sexually transmitted diseases. Information about the effectiveness of such efforts is disappointingly scant, however, with few programs having been evaluated rigorously (Bartels, Limber, O'Beirne and Wilcox, 1994; Kirby, 1994). Of the programs and policies that have been assessed, few show large or long-lasting effects (Kirby, 1994). Consequently debates about whether and in what ways social policies can shape and have shaped adolescent reproductive behavior also focus on the role of contraceptive services in addressing the needs of teens who are sexually active. However, there is considerable uncertainty about whether family planning strategies have their intended effects. Moreover, there is a widespread perception that some programs and policies have unintended, undesirable effects. For example, many maintain that sex

education that discusses contraception encourages adolescents to initiate sexual activity. In addition, many perceive that other programs that are not intended explicitly to affect fertility, such as AFDC, may have an unintended effect of encouraging teenage or non-marital childbearing because AFDC has traditionally been awarded primarily to single mothers with children. Despite the importance of these issues, relatively few studies have been conducted that explicitly examine the influence of social policies and programs on aggregate rates of teen births (Moffitt, 1992; Kirby, 1994).

Most researchers agree that multiple factors affect the probability of premarital sexual intercourse and pregnancy prevention among teens, ranging from the biological and personal attributes of the adolescent, to characteristics of relationships with family members and peers, to the neighborhood, school environment and social and cultural milieu in which teenagers are raised (Moore and Burt, 1982; Hayes, 1987). The majority of analyses of teenage sexual activity, contraceptive use, and childbearing have focused primarily on factors most proximate to the youth, such as parental supervision and peer influences (Miller and Moore, 1990). In part this is because most analyses are based on sample surveys or data from clinic populations. Nonetheless, even micro-level researchers have generally acknowledged the importance of social context in shaping teenage fertility. Increasingly, investigators have adopted a multi-level approach exploring how structural characteristics of the communities in which young people live affect the costs and benefits of their sexual and contraceptive practices.

The two theoretical frameworks most often applied to contextual analyses of teen fertility are the "culture of poverty" and "opportunity cost" perspectives. Those with a "culture of poverty" perspective argue that the values, orientations, and expectations held by persons living in areas of highly concentrated poverty influence youths' decisions regarding sexual intercourse and fertility. According to this argument, individuals faced with limited opportunities, crime ridden neighborhoods, and poor

living conditions often reject the behavioral norms of the larger society and adopt alternative patterns of work, marriage, and sexual activity. More recent theorists have suggested that as industrial jobs have declined within many of our nation's urban centers, higher income families have migrated out of cities and this change has made it difficult to sustain basic institutions, such as churches, stores, and schools which have historically provided explicit sanctions against anomalous behavior in inner-city neighborhoods (Wilson, 1987).

While not a direct test of the culture of poverty argument, research has shown that among black teenagers in Chicago, those from non-intact families, lower socioeconomic status backgrounds, and poor and highly segregated neighborhoods have significantly higher fertility rates (Hogan and Kitagawa, 1983). In a recent analysis using sample data from the National Survey of Family Growth, Billy, et al. (1993) found that the likelihood of premarital sexual intercourse was somewhat higher for whites in census tracts with high levels of crime and for whites and blacks in areas with greater percentages of women working full-time, perhaps indicating a shortage of adults in the home to supervise the activities of teens. Moreover, Billy and Moore (1992) found that non-marital childbearing was higher in areas with higher aggregate levels of out-of-wedlock childbearing and higher percentages of females in the community who are separated or divorced. In addition, Moore, Morrison and Gleib (1994) find that teens from families in which both the mother and the grandparent generations received welfare are more likely to initiate sex at a young age.

Recent proponents of the culture of poverty perspective argue that welfare programs have had the unintended effect of changing the social rules for the poor. For example, Murray (1984) maintains that government assistance programs have rewarded irresponsibility. Thus, over time, reliance on welfare as a form of support has come to be tolerated or even encouraged as patterns of dependency

and non-marital childbearing pass from one generation to the next. Murray, among others, maintains that the availability of AFDC to single mothers acts as an incentive for poor young women to give birth as teenagers. While Mosher and McNally (1991) found living in communities with 10 percent or greater households on public assistance to be associated with a lower level of contraceptive use among black women, it is unclear whether this correlation can be attributed to differences in intentions to conceive, a lack of relevant information about contraception, or differences in socialization.

According to the **opportunity cost** perspective, poor young women have "nothing to lose" in having children as teenagers (Moore, Simms and Betsey, 1986). Specifically, the assumption is that poor teens evaluate their existing options for schooling, work, marriage, and economic attainment and opt for early childbearing because doing so represents the option that brings the greatest utility or satisfaction. For example, Geronimus (1987) argues that teenage childbearing among blacks may be "strategically timed" and that "such timing is sensible in light of economic and labor force realities facing poor, black American women. Since black women can generally neither afford to take time out of the labor force nor the cost of child care when they have children in their twenties, they may find that the only time they can invest in infant care is during their teens, which, for them is often an enforced retirement from the labor force, or the lowest paying period of their working lives" (Geronimus, 1987:15-16).

Billy and Moore (1992) found the median housing value in communities to have a small negative effect on the risk of non-marital birth. The researchers argue that the housing value indicates the economic status of the community, and that disadvantaged communities have lower opportunity costs of out-of-wedlock births. Brewster et al. (1993) estimated the risk of contracepted and noncontracepted first intercourse relative to remaining a virgin, and found that the proportion of females divorced or

separated decreased the probability that first intercourse would be contracepted, while female labor force opportunities increased the likelihood of using contraception net of individual-level controls. They argue that the availability of employment opportunities for women increases the costs of an early non-marital pregnancy.

Duncan and Hoffman (1990) used data from the Panel Study of Income Dynamics to examine the influence of AFDC and other economic factors on non-marital fertility. They find highly significant effects of their measures of the economic benefits of avoiding non-marital births and only non-significant effects of AFDC benefit levels. On the other hand, Jackson and Klerman (1992) find higher AFDC payments associated with a higher teenage birth rate. In addition, Lundberg and Plotnick (1990) find marriage probabilities to be lower among pregnant white adolescents in states with higher AFDC benefit levels. Acs (1993), however, finds no effect of the AFDC benefit level on whether a single female has a child between ages 14 to 16 and age 23. He finds, rather, that education, family structure, and income variables have substantial race effects on the probability of a birth. Clearly, consistent and uniform findings regarding the hypothesized effect of AFDC have not been forthcoming.

In addition to the moral and social context of communities, there is also convincing evidence that teenage fertility is in large part a reflection of the demographic composition of the neighborhoods in which youth are raised. For example, in the study cited earlier, Billy and his colleagues (1993) found that the percentage black in the census tract lowered the likelihood of premarital intercourse among white women ages 15 to 19, which the researchers attribute to the limited availability of potential partners for whites rather than to the normative effect of "a less sexually restrictive black subculture." Furstenberg, Morgan, Moore and Peterson (1987) similarly found that blacks in integrated schools were less likely to initiate intercourse than blacks in predominately black schools. Billy and colleagues also

found that premarital intercourse among black female teens was *lower*, the greater the county's percentage of urban population and the larger the proportion of currently married females at the tract level.

In an examination of the correlates of non-marital childbearing at the aggregate level, Billy and Moore (1992) found that for non-black women a high female unemployment rate increases the risk of a non-marital birth, as does the male to female sex ratio among the never married. They maintain that the sex ratio determines the pool of potential sex partners.

Brewster et al. (1993), using data from the National Survey of Family Growth, examined the effect of family planning clinics per 1,000 population at the county level and found that they decrease the risk of first intercourse. But they also found that once individual characteristics were included in models predicting first intercourse, the contribution of family planning clinics was no longer statistically significant. On the other hand, they found that the percent black in the population remained significant net of micro-level controls.

The specific role that family planning services play in shaping the context within which adolescents make fertility decisions remains an open question, although several studies, now somewhat dated, have shed some light on the subject.

In an attempt to account for interstate differences in adolescent pregnancy, birth and abortion rates in 1980, Singh (1986) examined the influence of AFDC expenditures, availability of abortion services and private physicians, as well as the contribution of such factors as state population and mobility, including the percent black, percent poor, and the percent living in metropolitan areas; the level of social integration; religious fundamentalism; and political liberalism. She found sociodemographic factors to be more strongly related to abortion and pregnancy rates than were specific

family planning policies. Lower levels of abortion and pregnancy were found in states with smaller proportions of blacks and Hispanics, smaller urban populations, slower population growth and mobility, less prevalence of poverty, higher AFDC payments, smaller percentages of female-headed families, higher rates of high school completion, lower levels of religious fundamentalism, greater political liberalism, and higher status of women. Controlling for the prior birth rate and abortion availability, Singh found lower birth rates among white and black teens in states with higher proportions of teens served in family planning clinics. However, she found no effect of the percent of teens served on teen pregnancy rates. On the other hand, Singh found that larger increases in the proportion of women served by clinics during the preceding decade predicted larger declines in the birth rate between 1970 and 1980.

Olsen and Weed (1986) also examined the effects of family planning programs on teen pregnancy, birth and abortion rates at the state level. They found that although family planning enrollment was positively correlated with a reduction in the adolescent birth rate, it was also positively associated with the level of adolescent pregnancy and abortion in the state. Consequently, they concluded that the reduction in the adolescent birth rate was due to the increase in the adolescent abortion rate. In a later study (Weed and Olsen, 1986), the researchers extended their original analysis and used five demographic measures from the 1970 census -- racial composition, poverty level, proportion of urbanized population, residential stability, and rates of marriage -- to predict births, abortions and family planning enrollment among teens in 1978 and 1980. Models also included prior measures of the birth rate. As hypothesized, Weed and Olsen found that family planning programs lowered the number of unwanted pregnancies and births, but they also found higher rates of abortion in states with family planning programs.

Weed and Olsen did not control for prior pregnancy as well as birth rates; their findings may therefore be problematic. Family planning clinics are likely to be located in states where high rates of adolescent sexual activity, pregnancy and birth already exist. Thus, the association they documented between family planning clinic enrollment and sexual activity, pregnancy and birth rates may actually be attributable to pre-existing differences. Also, controls are needed for potentially influential background characteristics such as religiosity, political liberalism, family structure, and level of education.

Lundberg and Plotnick (1990) examined the influence of state welfare, abortion and family planning policies on pregnancy, abortion, marriage and childbirth decisions among white adolescents using data from the National Longitudinal Survey of Youth (NLSY) for 1979-1986. Their analyses were limited to white women due to severe under-reporting of abortions by black women in the NLSY. They examined the effect of several state policy variables including public funding for, availability of, and laws regulating abortion; state restrictions on contraceptives; availability of family planning services and state welfare benefit levels, on state-level pregnancy, abortion, and birth rates for white adolescents. As noted above, Lundberg and Plotnick found higher welfare benefits were associated with a higher incidence of non-marital childbearing. Also, liberal policies regarding abortion were related to higher abortion rates, and access to family planning services was negatively associated with premarital pregnancy.

Anderson and Cope (1987) examined whether publicly funded family planning programs were associated with lower fertility in 1980, especially among lower-income women. Jaffe and Cutright (1977), and Forrest, Hermalin and Henshaw (1981) had previously documented that publicly funded family planning programs were associated with a reduction in the fertility rate in the early 1970s. Using

local area data from the 1980 U.S. census, and employing a multivariate areal analysis, Anderson and Cope examined the effects on fertility of such factors as AFDC benefit levels, education funding, unemployment and local area poverty, controlling for prior levels of fertility. Contrary to public perception, their results showed that higher maximum AFDC payments were associated with lower teen fertility rates. They also found that enrollment in family planning programs had a strong negative association with the teen fertility rate in 1980, net of control variables. Abortion availability was also associated with a lower teen birth rate. They also found contextual measures of poverty, urbanism, and fundamentalism to predict higher teen birth rates, while the proportion unemployed was found to predict a lower teen birth rate.

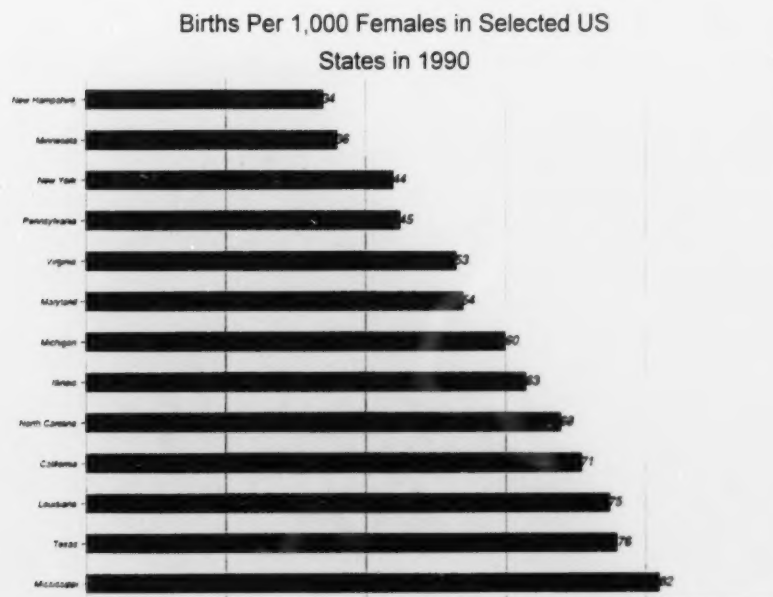
Major changes occurred during the 1980s. As noted above, rates of teen childbearing and the incidence of non-marital childbearing among teens rose. At the same time, a thirty percent decline occurred in public expenditures for family planning, net of inflation, between 1980 and 1990. (Gold and Daley, 1991). Data for the year 1990 have recently become available, both from the 1990 Census and from the Vital Statistics system. With these data, it has become possible to examine the implications of declining funding for family planning for rates of childbearing among U.S. teens. In the next chapter, the data and methods employed in this study are described. Chapter 3 reports the results of our multivariate analyses. These results are summarized and their implications are discussed in Chapter 4.

CHAPTER 2: DATA AND METHODS

OVERVIEW

Some studies focus on the behavior of individual persons or families. In this study the unit of analysis is the state. Therefore, the dependent variables in these analyses are measures of fertility at the state level, such as the number of births per 1,000 females aged 15 to 19 or 15 to 17 in the state, the pregnancy rate in the state, or the abortion rate in the state. As Figure 6 shows, teen birth rates vary tremendously across states, from 34 in New Hampshire to 82 in Mississippi. To examine the factors that might explain these variations in rates, we have developed measures of family planning availability and public policy at the state level as well. Also, to control for the confounding effects of social and economic factors that distinguish among states and which might contaminate an assessment of how policy factors affect fertility, we have developed a set of state-level measures of social and

Figure 6



economic factors, ranging from wages and education, to religion and voting patterns. In addition, because services tend to be located in areas where the need is great, we have also developed a set of measures of teen fertility for earlier years, to control for this confounding factor. The variables we have created for this study are described in the following sections of this chapter. A full description of our measures, the source, and descriptive statistics are presented in Appendix A. In the final section, the analysis methodology for this study is described.

VARIABLE DESCRIPTIONS

Dependent Variables

Our analyses begin with an examination of the effects of family planning policy and other measures on state-level white and black teen birth rates in 1990. Child Trends calculated the state-level birth rates for 1990. Race-specific birth rates were also calculated for 15 to 44 year old women, and for 20 to 24 year old women for 1990. Data on the number of births were provided by Stephanie Ventura of the Natality Branch of the National Center for Health Statistics. The population denominators for these birth rates came from the U.S. Bureau of the Census.

We also explore the effects of sociodemographic and policy measures on non-marital teen birth rates for younger teens (aged 15 to 17) in 1990, by race. Data on the number of non-marital births to teens 15 to 17 were provided by the National Center for Health Statistics. However, data on the number of unmarried 15 to 17 year olds in a state were unavailable for the denominator in this measure. Instead, we estimated the non-marital teen birth rate by using the total number of 15 to 17 year olds

in a state; since virtually all 15 to 17 year olds were unmarried in 1990, we believe this represents a reasonable estimate of the non-marital birth rate among younger adolescents.

Pregnancy and abortion rates for teens in 1988 by race and by three age categories for teens are also explored. These data were provided by the Alan Guttmacher Institute, in machine-readable format. They are also published in Henshaw (1993). Data on abortion rates for women of all ages were provided by the Alan Guttmacher Institute and are published in the State and Metropolitan Area Data Book, 1991. Pregnancy and abortion analyses are conducted for 1988, as this is the year for which most recent estimates are available.

The percent of teen pregnancies that resulted in a birth in 1988, the percent of teen pregnancies that resulted in births to unmarried mothers in 1988, and the percent of pregnancies that were ended by abortion in 1988 were calculated by Child Trends, using the birth, pregnancy and abortion data already described.

We also analyze the effect of policy and sociodemographic measures on teen birth, pregnancy and abortion rates in 1980, in an effort to further understand our results for 1990 fertility outcomes. The white, black and total teen birth rate data for 1980 come from Vital and Health Statistics, series 21, No. 42. Teen pregnancy and abortion rates for 1980 can be found in Henshaw, Kenney, Somberg, and Van Vort (1989).

Policy Variables

Family Planning Policy. Data on family planning expenditures and on service utilization are very difficult to locate. We were able, however, to compile two measures related to family planning

policy on the state level for 1987, in order to analyze the effects on 1988 pregnancy and abortion rates, and 1990 birth rates.

The estimated percent of teens in need of family planning services who received such services was constructed by dividing the number of teens who were served at Title X clinics by the number of teens at risk of unintended pregnancy. The data for the denominator were taken from *Women at risk: The need for family planning services, state and county estimates 1987*, published in 1988 by The Alan Guttmacher Institute. The definition of teens at risk of unintended pregnancy is teens who were or have ever been sexually active, are fecund, and are not currently pregnant or currently attempting to become pregnant.

The numerator, the number of adolescent women less than twenty years old served at Title X clinics in 1987, was from the Office of Population Affairs, U.S. Department of Health and Human Services, Public Health Service, in a 1987 BCRR report. The clinics included all health facilities receiving money from Title X of the Public Health Service Act, a federal grant made to private agencies and state and local governments to provide family planning services.

The main drawback to this measure is that the numerator only includes those adolescents who received family planning services from Title X clinics. Data are not available to measure the number of teens receiving family planning services at any place other than clinics funded with Title X monies (such as private physicians, or clinics funded with other public funds).

A second family planning measure was developed to assess funding for family planning services. The amount of public dollars spent on contraceptive services for women at risk of unintended pregnancies in 1987 was constructed by dividing the total amount of federal and state expenditures for family planning services in each state by the total number of women at risk of unintended pregnancy per state. Total

expenditures included Medicaid, Title X, Social Services block grant, MCH block grant, other miscellaneous federal funds, and state sources spent on family planning services (Gold and Guardado 1988). Women at risk of unintended pregnancy were those women who were or have ever been sexually active, fecund, and not currently pregnant or attempting pregnancy. Data from the Alan Guttmacher Institute (1988) included those women aged 13-19 years old and 20-44 years old who were under 200 percent of the poverty level.

Ideally, we would have had a measure of the public dollars spent on contraceptive services per **teen** at risk. However, such a measure was impossible to construct since there are no data available on the distribution of public dollars for contraceptive services by type of family planning client. The lack of this information is remarkable, and seriously undermines our efforts to assess the impact of public funding for family planning services.

For analyses of 1980 fertility outcomes, we attempted to get parallel measures of family planning policy in 1979. Our measures were not precisely the same, however, due to data limitations. The measure of utilization in 1979 is the percent of teens at risk of unintended pregnancy who were served at **family planning clinics** (recall that in 1987 our measure is only those served at **Title X** clinics). This measure is preferable, but unfortunately is not available for the late 1980s. Data on the number of teens 15 to 19 at risk were published in Torres, Forrest and Eisman (1981). The estimate of teens at risk in each state was calculated using data on sexual activity, fecundity and birth expectations from the 1976 National Survey of Family Growth and the 1979 Johns Hopkins University Survey of Young Women. The number of 15 to 19 year olds served by organized clinics are based on data collected by the state and local family planning data systems.

The measure of total dollars spent by Federal and state sources on contraceptive services in fiscal year 1979 was also published in Torres, Forrest and Eisman (1981). This measure does exactly parallel our measure on public expenditures in 1987. However, in this case the quality of the data are not as good in 1979, because ten states in 1979 did not report the amount of state expenditures. The authors chose to consider the state contribution in these states as zero; total expenditures for all states were calculated by adding the state and Federal expenditures. This results in a possible underestimate of expenditures in the ten states that did not report their expenditures on contraceptive services.

Teen Pregnancy and School-Related Policies: State policy regarding pregnancy prevention programs and sex education in schools can affect teenage fertility. To assess this factor, we included measures of a state's policy on pregnancy prevention education in schools obtained from an article by Kenney, Guardado, and Brown (1989). States were coded as either requiring, encouraging, discouraging, prohibiting, or taking no position on pregnancy prevention education in public schools. We also created a scale combining a state's policy on pregnancy prevention education with their policy on AIDS and STD (sexually transmitted diseases) education in the schools, also reported in the article by Kenney, et al. (1989).

We also obtained a measure indicating states' responses to the adolescent pregnancy issue. States were characterized as having or not having a coordinated program and policy for adolescent pregnancy prevention in 1985 and 1990 by J. Koshel (1990). Koshel also determined which states gave monetary support to school-based clinics in 1988.

Welfare Policy: Some have speculated (Moffitt, 1992) that generous AFDC benefits in some states are correlated with out-of-wedlock births. The variable used to measure the level of AFDC benefits in each state was taken from unpublished data from the U.S. Department of Health and Human services, Family

Support Administration. Typical AFDC payment amounts were for a family of three = one adult plus two dependents).

Abortion Policy: The variable measuring minors' access to abortion services was constructed primarily from unpublished data from the Alan Guttmacher Institute on laws regarding abortion services to minors. Other data were obtained from the National Abortion Rights Action League; there was no single source of historical data on minors' access to abortions, which made uncovering data difficult. For individual state laws, additional information was obtained from: the Arizona Right to Choose, Inc.; the Kansas Department of Health and Environment; the State of Idaho Attorney General's Office; and the State of Wyoming Governor's Council on Teen Pregnancy.

Many states did not have any laws on the books pertaining specifically to minors until the late 1980s. Other states had laws severely limiting minors' access to abortions, but they had been enjoined or were not enforced. The laws also ranged in strictness, including one-parent consent, two-parent consent, parental notification, mandatory counseling, or judicial bypass. Many calls were made to individual states to clarify information when necessary.

The abortion policy measure was later collapsed into two categories, indicating states that have no restriction on minors' access to abortion, versus states that have some restrictive policy (including parental notification, parental consent, mandatory counseling, and parental consent with judicial bypass). In addition, there was one state for which no information was available on these laws; this state was assigned the modal value of the other states, which was to have some restriction on minors' access.

Federally funded abortions were severely restricted by the Hyde Amendment in 1977. However, states could use their own funds to provide Medicaid abortions. Since there is variation among states on whether or not they fund abortions, we composed a measure indicating whether or not a state

provides funds for abortion. In 1980, \$58,907,000 total (\$10,699,000 Federal and \$48,208,000 state) public dollars were spent to fund abortions. Federal funding of medically necessary abortions was permitted during a seven-month period from February 19 to September 19, 1980, under a court ordered injunction of the Hyde Amendment. Federal District Court Judge John F. Dooling, Jr. defined medically necessary abortions as those "necessary in light of all factors-- physical, emotional, psychological, familial and the woman's age-- related to the health-related well-being of the pregnant woman" (Gold, 1982). The injunction was lifted by the Supreme Court in *Harris v McRae* and *Williams v Zbaraz* when the Hyde Amendment was found to be constitutional.

Since 1981, Federal funds have been available for abortions only in cases where the mother's life was threatened. In 1987, the Federal government spent \$160,000 on abortion services (Gold and Guardado, 1988) for 322 Federally funded abortions. Sixteen states and the District of Columbia spent a total of \$64,113,000 to provide 188,919 abortions to women. In 1990, \$119,000 from Federal funds were spent on 165 abortions, and state funds totaling \$65,180,000 were spent on 162,418 abortions (Gold and Daley, 1991).

The Federal government spent \$41,000 less on abortion services in 1990 than in 1987. In 1980, during the seven month injunction on the Hyde Amendment, the Federal government spent over 10.5 million dollars more on abortion services than in 1987, and almost 10.6 million dollars more than in 1990.

Contextual Variables

Wherever possible, separate state-by-state social indicators for males and females and for whites and blacks were developed to use as the predictors of teen fertility outcomes. The variables forming

the social context within each state include education, religion, labor force participation, family structure, political participation, crime, housing, and women's status.

Education: To explore the hypothesis that educational opportunities are associated with lower rates of teenage childbearing, several measures of educational attainment at the state level were created. All information on the proportions of males and females who have graduated from high school or college are derived from decennial census data. For example, the proportion of black females in each state in 1980 who were high school graduates was calculated, a proportion that varied from 63% to 96%, and was obtained directly from Table 76 in General Social and Economic Characteristics, 1980 (individual state volumes, C-2-52). Proportions of males and females age twenty-five and over (by race) who were college graduates in 1980 were computed by Child Trends using data from the same source, Table 76. Data for 1990 were published by the U.S. Bureau of the Census in Minority Economic Profiles, 1990 CPH-L-92.

Religion: Fundamentalist religions tend to place considerable emphasis on the restriction of sex and childbearing to marital unions, thus early marriage and early childbearing within marriage tend to be more common among fundamentalists. Non-marital childbearing, therefore, should be lower in states with high proportions of fundamentalists. State-level measures of the proportion of the population who belong to fundamentalist faiths were created for 1980 and 1990. The numbers of persons in 1980 living within a state who were members or regular participants in various Protestant and Catholic churches were taken from B. Quinn, et al. (1982). Data on the number of the population in 1989 who were Jewish were taken from the State and Metropolitan Area Data Book, using data from the American Jewish Committee and the American Jewish Publication Society's American Jewish Year Book 1989.

Data on religious affiliation for 1990 are taken from M. B. Bradley, et al. (1992). The moderate and liberal definitions are taken from the McKinney typology (Roof and McKinney, 1987).

The fundamentalist typology for 1990, including Churches of Christ, Church of God, Latter-Day Saints (Mormon), Nazarene, Free Methodist, Free Will Baptist, Lutheran-Missouri Synod, Mennonite, Pentecostal Holiness, Salvation Army, Seventh-Day Adventist, and Southern Baptist is taken from Morgan and Meier (1980). This typology was also used by Arnold Linsky, John Colby, and Murray Straus in 1987, and by Anne E. Winkler in 1993.

Labor Force Participation: The opportunity cost hypothesis suggests that higher levels of female employment should encourage teens to defer childbearing in favor of schooling and employment. Data for states on the percentages of women, Hispanics, whites, and blacks employed in various occupational categories for the years 1987 and 1989 are taken from the Bureau of Labor Statistics' Geographic Profile of Employment and Unemployment. The bulletin for 1989 is #2361 and the bulletin for 1987 is #2305. Information for 1980 by race on the proportion of all females (and also the proportion married/husband present) with children under 6 who are in the labor force are calculated from data published in Table 77 of General Social and Economic Characteristics, individual state volumes.

Unemployment is expected to predict higher rates of early childbearing, as the opportunity costs of delaying motherhood are lessened when unemployment is high. Data on the percent of unemployed females aged 20 to 21 by race were taken from Table 214 in the Decennial Census, PC80-1-D, Detailed Population Characteristics, 1980, individual state volumes.

Overall unemployment rates for women, men, teens, and blacks from 1983 through 1988 appeared in the Bureau of Labor Statistics' Handbook of Labor Statistics, Bulletin 2340, Washington D.C.: U.S. Government Printing Office, August, 1989. The same data for 1989 appeared in the State

and Metropolitan Area Data Book, whose source was the Bureau of Labor Statistics' Geographic Profile of Unemployment and Employment, an annual issue.

Family Structure: To explore the hypothesis that teens living in states with a larger proportion of the population residing in female-headed rather than two-parent families will be more likely to become teen parents, race-specific measures of family structure patterns at the state level were created for 1980 and 1990. The proportion of children in female-headed households in 1980 by race was calculated from data published in Table 21 of the 1980 General Population Characteristics, Volumes B-2-52 (individual state volumes), published in 1983.

Data on the numbers and percents of children in female-headed households by race for 1990 appeared in Table 44 of the 1990 Census of Population, volumes CPI 1-52 (individual state volumes), published in 1992.

Income and Poverty: Both the opportunity cost and the culture of poverty hypotheses posit that poverty predicts higher teen childbearing rates. Data on personal income per capita for 1970, 1980, 1985, 1988 and 1989 appear in the State and Metropolitan Area Data Book, 1991. Also in the Data Book were data on the state's per capita money income in current dollars as a percent of the U.S. average, the percent of children below the poverty level in 1979, and the numbers of AFDC, food stamp, and school lunch recipients in 1980, and 1988. Median family income by race for 1989 for each state was transcribed from Minority Economic Profiles, 1990, CPH-L-94, which reported 1990 decennial census data.

Data on average annual pay for 1980, 1985, 1987 and 1988 for each state also appear in the State and Metropolitan Area Data Book, 1991. The percent below 100% of the poverty level in 1989 among teens 12 to 17 and among persons 18 to 64, by race, appear in Minority Economic Profiles,

U.S. Bureau of the Census, July 1992, 1990 CPH-L-95, pp. 3-6. The percent of residents below 100% of the poverty level in 1979 was published in Statistical Abstracts of the United States.

Voting and Liberalism Scores of the Voting Records of U. S. Representatives: A higher proportion of people voting is often regarded as an indicator of civic concern and efficiency. State-level voting information includes the percent of the voting age population who cast a vote for President of the U.S. in 1980 and in 1988, the percent of voting age population registered to vote in those years, the size of the voting age population, the number of registered voters, the percent of voting-age population casting a vote for their U.S. Representative in 1988, and the size and percentage African American of the voting-age population for 1990. These data appear in the State and Metropolitan Area Data Book, 1991, and were originally compiled by the Committee for the Study of the American Electorate, Washington, D.C.

Scores on social liberalism are derived from the National Journal. The editors of the National Journal selected specific congressional votes as representing social issues, such as voting to adjust the annual ceiling for the food stamp program to reflect inflation and unemployment rates. They then ranked the members of congress from most conservative overall to most liberal on a year's set of social-issue votes. The calculated social liberalism scores by state for the year 1981 appeared in the May 8, 1982 issue in an article by M. Barone and G. Ujifusa. Child Trends calculated social liberalism state scores (votes on social policy issues for the years 1983, 1988, and 1990) from the National Journal issues of May 12, 1984, January 28, 1989 and January 19, 1991, respectively, averaging the scores of the state's delegates. The National Journal presented the scores individually by member (not as state averages) in those years.

Crime: Social disorganization is predicted to be related to higher rates of early childbearing. One proxy for social disorganization is the crime rate. All of the crime data appeared in the 1991 State and Metropolitan Area Data Book. The Federal Bureau of Investigation is the source for all of the variables on numbers of crimes and the crime rates. The Office of Juvenile Justice and Delinquency Prevention provided data on the juvenile custody rate for 1987. The Bureau of Justice Statistics' annual volume Probation and Parole and their annual volume Prisoners in State and Federal Institutions provided data on numbers of adults on probation in 1987 and the prisoner rates for 1980 and 1988. Also included in the data file are numerous crime rates (violent, robbery, murder, forcible rape, etc.) provided by the F.B.I. and appearing in the State and Metropolitan Area Data Book, 1991.

Housing: Housing quality and level of ownership reflect economic status and the stability of family life in a community. Teens in an economically stable home environment may be less likely to experience an early birth. State-level housing variables include the percent of housing occupied by owners, the percent having no telephone, the percent of households with no access to a car, the median value of occupied housing, and the mean gross rent of occupied housing, all for 1980. Also included are the percent change in the number of housing units from 1980 to 1990 and from 1970 to 1980. All housing data are from the 1970, 1980, and 1990 censuses of population and housing. They are published in the State and Metropolitan Area Data Book, 1991.

Women's Status: The higher the economic and social status of women, the lower rates of early childbearing are expected to be. The percentages of women on county governing boards in 1988 and the percentage of women mayors and municipal council members in 1985 were identified as measures of the status of women at the state level. These data were provided by the Center for the American

Woman and Politics, The Eagleton Institute of Politics, Rutgers University, New Brunswick, New Jersey.

Demographic Control Variables

The demographic variables developed to control for confounding influences on the teen birth rate include: birth, pregnancy, and abortion rates for prior years; metropolitan residence; geographic mobility; and population size, growth, and composition.

Birth Rates: Because clinics are generally located in areas where teenage childbearing is high, the teen birth rate and the number of clinic patients can be positively correlated. To control for this very likely possibility, we control for prior fertility. Teen birth rates for 1970 and for 1980 by race in each state were taken from Vital and Health Statistics Series 21, No. 27 and No. 42, respectively. Child Trends calculated the birth rates for 1985, using revised population denominators provided by the U.S. Bureau of the Census. These revised estimates use race categories consistent with the reporting of vital statistics by the U.S. National Center for Health Statistics. The chief racial modification involves reassigning about ten million "other race" individuals, over 95 percent of whom were of Hispanic origin, to racial categories consistent with those used by providers of all other data, and pursuant to an Office of Management and Budget directive. Assignment to a specified race was made on an individual (not household) basis and according to localized distributions.

Birth rates for 1988 were derived from a file provided by the Alan Guttmacher Institute. Child Trends calculated the percentage changes in the birth rates over time by state by race. Only 42 states and the District of Columbia had a sufficient number of African Americans for black teen childbearing rates in 1988 to be included. (There are small variations in the number of such states by year and age

group, varying from 40 to 43 states.) Race-specific birth rates were also calculated for 15 to 44 year old women and for 20 to 24 year old women for 1985.

We also analyzed non-marital birth rates for younger teens (15 to 17) in 1990. However, we could not obtain a comparable measure in 1985 to control for prior non-marital birth rates; instead, we control for the overall teen birth rate in 1985. This proxy for prior fertility was still highly correlated with the 1990 out-of-wedlock birth rates ($r = .55$ for whites, $p < .001$; $r = .82$ for blacks, $p < .001$), and the measure still strongly predicted to 1990 rates.

Pregnancy and Abortion Rates: The teenage pregnancy and abortion rates for 1980 and 1985, total and by race, appeared in Henshaw, Kenney, Somberg, and Van Vort, Teenage Pregnancy in the United States, published by the Alan Guttmacher Institute in 1989.

Metropolitan Residence: The proportion of the state population that was urban in 1990 appeared in the 1992 Statistical Abstract, in Table 29. The 1980 percent appeared in the State and Metropolitan Area Data Book, 1991. Urban residents are all persons living in places of 2,500 or more which are incorporated, or which are census designated places (but excluding those persons living on the rural fringes of these places), together with those persons who live in closely settled areas with at least 50,000 inhabitants in the core and surrounding areas together.

Mobility: The proportion of the population moving to a different county or state between 1975 and 1980, by race, were calculated by Child Trends from the 1980 Census of Population, Vol. C (individual state volumes 2 - 52), Table 75.

Population Size, Growth and Composition: The number of females by five-year age groups, by race and Hispanic ethnicity for 1985 and 1988 represent revised estimates (Modified Age, Race, Sex estimates) provided by the U.S. Bureau of the Census. General minority composition of the states for

the years 1980 and 1990, the number of immigrants admitted in 1985 and 1989, sex ratio for 1989, and the population density in 1990 appeared in the State and Metropolitan Area Data Book, 1991.

The state level data file prepared for this project is available to other researchers who request it. Also, the data are being provided to Sociometries, Inc., 170 State Street, Suite 260, Palo Alto, CA 94022-2812, (415-949-3282), for inclusion in the Data Archive on Adolescent Pregnancy and Pregnancy Prevention.

VARIABLE PROBLEMS AND MISSING DATA

As discussed above, some of the data we collected had missing data for some states; we encountered other data limitations such as a dearth of available data on family planning utilization and expenditures. For example, we ideally expected to find information on the number of teens served at all family planning clinics in the United States (in or around 1987). After extensive phone calls and library research, we became reconciled to the fact that after 1983, the only data available on family planning utilization was the number of teens served at Title X clinics. One might expect that most family planning services are provided at Title X clinics, but this is not actually the case. Due to Title X funding cuts and restrictive regulations on the uses of Title X monies during the 1980s, many family planning clinics no longer receive Title X funding. Therefore, the measure of the percent of teens at risk who were served at Title X clinics in 1987 is an underestimate of the desired measure of the percent of teens at risk of unintended pregnancy who were served at all family planning clinics. Due to this underestimate, we may see little if any effects of this family planning measure on teen fertility.

Teen birth rates are defined as the number of births per 1,000 females aged 15 to 19; therefore, the denominator in the birth rate is the number of females 15 to 19 in that state. When calculating race-

specific birth rates, some of our denominators are too small to obtain a stable estimate of the birth rate. For black teen birth rates, we had to omit eleven states from the analyses due to unstable birth rate estimates.

STATISTICAL METHODS AND MODEL CONSTRUCTION

We use ordinary least squares multiple regression analysis in order to assess the net effects of various contextual, demographic, and policy-related measures on birth, pregnancy, and abortion outcomes. For each outcome analyzed, a systematic approach to model construction was employed. The base model for every dependent variable analyzes the effects of our various measures without controlling for prior fertility patterns; in addition, since our primary interest is in the family planning policy measures, we have a base model with each family planning measure by itself, and then a base model with the two measures in the model simultaneously. Our subsequent models always control for earlier fertility patterns; we controlled for rates five years prior to the outcome if data were available. The other measures included in the models varied somewhat depending on the availability of data. Models were pruned of non-significant variables to preserve degrees of freedom.

The District of Columbia was excluded from all models run on whites only, and all models that included both races, since the demographic profile is very different from most other states (the percent African American in the District in 1990 was 65%; in the next highest state, Mississippi, the percent black was 36%). We included the District in models run only on blacks, since there is no reason to

expect that the African American population in the District of Columbia is different than the African American population in the 50 states.¹

Standardized beta coefficients are presented in all models described in Chapter 3. Standardized coefficients allow us to compare the relative effect of each measure in the model, and to compare effects of measures across models of the same sample size. Unstandardized coefficients, however, are easier to interpret, and are particularly helpful for understanding policy and program implications of our analyses. As a result, unstandardized coefficients are highlighted periodically throughout Chapter 3. Appendix B displays unstandardized beta coefficients for these selected regression models.

We began our analyses with an exploration of the effects of our various measures on the teen birth rate in 1990 for whites and blacks separately. We then analyzed models for abortion rates and pregnancy rates in 1988 for all races. We also examined teen birth rates in 1980, birth rates for women 20 to 24 and for all women in 1990, and pregnancy outcomes in 1988. Detailed descriptions of these models and the results of our analyses are presented in Chapter 3.

¹We also ran models for black birth rates with the District excluded, and found no significant differences in our results.

CHAPTER 3: RESULTS

In this chapter, the results of a series of multivariate models assessing the impact of family planning services and policy on teen fertility are presented. In light of the decline in public funding and support for family planning, we are particularly interested in whether family planning service utilization, public expenditures or policies at the state level predict teen birth rates net of other sociodemographic factors. We focus on two primary family planning/contraceptive service utilization measures: the percent of teens at risk who were served at Title X clinics in 1987, and the total public dollars spent on contraceptive services per woman at risk in 1987. We also examine the effects of abortion policy, AFDC benefit levels, and the presence of a state focus on adolescent pregnancy.

We examine a number of dependent variables, specifically:

- the 1990 teen birth rate (births per 1,000 females 15 to 19) by race (Tables 1-3 for whites; Tables 4-6 for blacks)
- the 1988 teen pregnancy rate (pregnancies per 1,000 females 15 to 19) (Tables 7-9)
- the 1988 teen abortion rate (abortions per 1,000 females 15 to 19) (Tables 10-12)
- the 1980 teen pregnancy rate, birth rate, and abortion rate by race (Tables 13-15)
- the 1980 teen birth rate by race (Tables 16-18 for whites; Tables 19-21 for blacks)
- the 1990 non-marital birth rate for 15 to 17 year olds (number of non-marital births per 1,000 females 15 to 17) by race (Tables 22-24 for whites; Tables 25-27 for blacks)
- the 1990 birth rate for 20 to 24 year olds by race (Table 28 for whites; Table 29 for blacks)
- the 1990 birth rate for 15 to 44 year olds by race (Table 30 for whites; Table 31 for blacks)
- the percent of teen pregnancies ending in a non-marital birth in 1988 (Table 32)
- the percent of teen pregnancies ending in a birth in 1988 (Table 33)
- the percent of teen pregnancies ending in an abortion in 1988 (Table 34)

Our analyses begin with a base model that includes the primary independent variable of interest, other state-level sociodemographic measures including poverty rates, AFDC benefit level, labor force participation rates, and other population characteristics. Our base model does not control for prior birth rates to teens. Subsequent models control for earlier birth rates and assess the impact of various policy measures such as minors' access to abortion, public funding for abortions, and pregnancy prevention programs. This strategy allows us to examine the relative impact of major state level family planning policy measures, sociodemographic contextual factors, and other state policy measures related to family planning².

Tables 1 through 3 examine the impact of these variables and other contextual measures on teen birth rates for whites. Corresponding models for black teens are presented in tables 4 through 6.

Tables 1-3: White Teen Birth Rates for 15 to 19 year olds in 1990

Table 1--Whites 15-19, 1990 Birth Rate: Models with Percent of Teens at Risk Served at Title X Clinics in 1987

Access to and use of reproductive health services can be an important contributor to the likelihood of childbearing among young women. Model 5b in the first column of Table 1 shows the association between one measure of reproductive health services in the state as a predictor of the state's teen birth rate, net of a variety of state characteristics. When basic sociodemographic factors are considered, the percent of teens at risk served at Title X clinics is positively and significantly related to 1990 birth rates among white teens. This is not surprising: it indicates that funding is focussed in

²Because of the complexity of these analyses, and because of the many contextual measures we were interested in, we ran many more models than are shown in this report. We are showing models that provided the strongest and most consistent results. The non-consecutive model numbers shown in Tables 1 through 35 reflect this.

states with higher teen birth rates. A higher proportion of the population that is Hispanic or fundamentalist, a higher female labor force participation rate, and a higher poverty rate are also associated with a higher white teen birth rate. The level of violent crime has a marginally positive significant relationship with birth rates. On the other hand, the percent of the state population that voted in the 1988 presidential election is associated with lower birth rates, and a policy of unrestricted access to abortion for minors is related to a lower white teen birth rate.

Once we control for the existing pattern of childbearing, many of these contextual factors have no influence on birth rates among white teens. In particular, as shown in Model 11b, reported in the second column of Table 1, the percent of teens at risk who are served at Title X clinics is no longer related to 1990 birth rates among white teens when the 1985 rate is included in the model. Also, the percent Hispanic and the percent fundamentalist are no longer related to 1990 birth rates once 1985 birth rates for white teens are controlled. The female labor force participation rate coefficient remains positive, but in varied models it fluctuates between being marginally significant and not at all significant, depending on the other variables included in the model. The percent voting for president in 1988 is still related to lower birth rates, but the percent below poverty is no longer related to the outcome. The violent crime rate, however, significantly predicts to higher birth rates in all models. The median AFDC payment in a state is positively associated with teen birth rates, and minors' access to abortion is moderately related to lower birth rates for white teens ($p < .10$).

Table 2--Whites 15-19, 1990 Birth Rate: Models with Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

In this table, we examine the effect of a different measure of family planning services: the amount of dollars expended by all public sources (Federal, state and local) per woman at risk. The

number of women at risk in each state is estimated as the number of women who are sexually active, fecund (not sterilized or determined to be infertile), and not pregnant or trying to become pregnant.

In the base model (Model 4b, shown in the first column), the dollars spent on contraceptive services per woman at risk has no significant effect on 1990 birth rates for white teens, although a negative relationship is observed. However, the percent fundamentalist in 1990, the 1989 female labor force participation rate, and the teen poverty rate are all related to higher birth rates among white teens. The percent voting in the 1988 presidential election is again negatively related to the teen birth rate for whites. Neither minors' access to abortion, nor the average AFDC monthly payment is related to the teen birth rate.

In the second through sixth columns, results are shown controlling for earlier levels of teen fertility. Once the 1985 birth rate is added to the model, we note that the dollars spent per woman at risk is related to a significantly lower teen birth rate in models found in columns 3 through 6. The percent in a state voting for president remains negatively related to teen birth rates for whites. The violent crime rate is marginally associated with a higher white teen birth rate, and the level of AFDC payments is positively related to the birth rate as well. None of the other policy related measures were related to the white teen birth rate.

Table 3--Whites 15-19, 1990 Birth Rate: Models with Percent of Teens at Risk Served at Title X Clinics in 1987 and Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

In order to consider the relative effect of the percent of teens served and the public dollars spent per woman at risk on births to teens, we examine them simultaneously in this next set of multivariate models. We first note that both measures are associated with teen births among whites in a direction consistent with our earlier models. That is, in our base model (1b), where we do not control for prior

birth rates, the percent of teens at risk who are served at Title X clinics is significantly related to higher teen birth rates, while the public dollars spent on contraceptive services per woman at risk is not significantly related to the outcome. The percent of the population that is Hispanic, the percent fundamentalist, the female labor force participation rate, the violent crime rate, and the percent of white teens below 100% of poverty continue to be associated with higher teen birth rates among whites. The percent voting for President is negatively related to birth rates, and the remaining measures in the model are not associated with the outcome.

In subsequent models, where we control for the 1985 birth rate, the total dollars spent on contraceptive services per woman at risk is associated with a significantly lower white teen birth rate. The unstandardized beta coefficient in these models (not shown) ranges from $-.13$ to $-.18$, which means that for every additional one hundred public dollars spent on contraceptive services per woman at risk, the teen birth rate is predicted to decrease by between 13 and 18 births per 1000 females aged 15 to 19. However, net of this effect, the percent of teens at risk who are served is positively and significantly associated with the birth rate. The female labor force participation rate, the violent crime rate, and the average AFDC payment are all significantly related to higher birth rates as well, while the percent voting for president is still negatively associated with the outcome. None of the other policy variables (such as state policies on pregnancy prevention and sex education, policies on minors' access to abortion, and funding for abortion or school-based clinics) have any significant association with white teen birth rates.

In summary, the percent of teens at risk who were served is positively associated with teen birth rates for whites in 1990, while public dollars spent per woman at risk is associated with a decline in birth rates. Both measures continue to significantly predict birth rates among white teens even after

controlling for the level of teen fertility in 1985 and demographic factors such as labor force participation and rates of crime. The percent Hispanic, rates of poverty, and education level do not significantly predict 1990 birth rates for white teens after controlling for demographic and fertility measures. The strongest predictor of 1990 birth rates for white teens is the prior rates of birth in 1985.^{3,4}

Tables 4-6: African American Teen Birth Rates for 15 to 19 year olds in 1990

Table 4--Blacks 15-19, 1990 Birth Rate: Models with Percent of Teens at Risk Served at Title X Clinics in 1987

Because of large racial differences in teen birth rates, we feel it is important to examine the impact of contextual and policy factors on childbearing separately by race. Tables 4 through 6 provide results for multivariate regression analyses of the association of contextual factors with 1990 African American teen birth rates that parallel the earlier analyses of white teens. While the data indicate similarities in the association between family planning and contextual measures and birth rates to black teens, some very interesting distinctions emerge. For example, in our base model (5b), before controlling for the prior teen birth rate among blacks, the percent of teens at risk who are served is not significantly related to the 1990 black teen birth rate; a significantly positive association was observed

³We also examined the effects of family planning policy changes on the change in the white teen birth rate between 1985 and 1990, and 1980 and 1990. We found no significant effects of changes in family planning funding and service delivery on the change in the teen birth rate for whites.

⁴We did further analyses exploring the change in public dollars spent on contraceptive services per woman at risk. Our most important finding here was that from 1979 to 1990, the total public dollars spent on contraceptive services per woman at risk, in constant dollars, declined for all but one state. In fact, 37 states had a 50% or greater decline from 1979 to 1990. We created a measure indicating a 50% or greater decline in funding; this measure significantly predicted an increase in the 1990 white teen birth rate of 3 births per 1000 teen females.

for white teens in the base model, although the effect was eliminated when prior birth rates were controlled. The female labor force participation rate and the percent of African American teens below the poverty line are significantly associated with higher black teen birth rates, and the violent crime rate is marginally related to higher birth rates. The percent of the population in a state that is African American is related to lower birth rates; that is, higher proportions of African Americans in the population are associated with lower birth rates among black teens in 1990. None of the other measures in this model are associated with 1990 African American teen birth rates.

The remaining models in this table (Models 11b--37j) control for the 1985 black teen birth rate. The prior birth rate is, as was found for whites, a large and very significant predictor of the current birth rate. Some effects disappear, such as those due to the percent of the population that is African American, and the percent of black teens below poverty, while others remain statistically significant. For example, the female labor force participation rate remains positively and significantly related to the teen birth rate. Other variables display significant relationships to the birth rate where no prior association was observed in our base model (5b). For instance, the percent of African Americans in a state with at least some college education is now significantly associated with lower teen birth rates; state public funding for abortions is also related to lower birth rates. The percent of teens at risk served at Title X clinics is still unrelated to the outcome, and the other policy variables do not have any significant relationship to the 1990 African American teen birth rate either.

Table 5--Blacks 15-19, 1990 Birth Rate: Models with Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

Models assessing the effect of public dollars spent on contraceptives among women at risk on birth rates among black teens show similar results to those in Table 4. In Model 4b (Table 5), the

public money spent on contraceptives does not predict the black teen birth rate, nor do any of the other state policy variables (public funding for abortion was not included in this model). The percent African American in a state is negatively related to the teen birth rate in our base model, while the female labor force participation rate and percent teens below 100% of poverty are associated with higher birth rates. In addition, the violent crime rate is significantly related to higher birth rates.

Controlling for 1985 birth rates does not alter the coefficient for public money for contraceptive services. The female labor force participation rate remains positively associated with 1990 birth rates for African Americans teens; however, the significant relationship between the teen poverty rate and 1990 black birth rates has disappeared, and the percent of the population that is African American is no longer associated with the outcome, nor is the violent crime rate. However, education levels emerge as a significant predictor of lower 1990 African American birth rates after controlling for 1985 black teen birth rates, and public funding for abortions is marginally related to lower birth rates. However, other than public funding for abortions, none of the policy related measures significantly predict 1990 black teen birth rates.

Table 6--Blacks 15-19, 1990 Birth Rate: Models with Percent of Teens at Risk Served at Title X Clinics in 1987 and Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

The models including both of the available measures of family planning policy have similar results to those in Tables 4 and 5. Neither the percent of teens at risk served, nor the public dollars spent on contraceptive services, is related to the black teen birth rate in 1990, before or after controlling for the 1985 birth rate. Prior to controlling for the earlier birth rates, the percent African American is negatively related to the teen birth rate for black teens. Both the female labor force participation rate and the black teen poverty rate are significantly associated with higher teen birth rates, while the violent

crime rate is marginally associated with higher birth rates. As before, none of the policy measures are related to the teen birth rate for African Americans.

After including 1985 birth rates in the models, the percent of blacks completing some college significantly predicts lower 1990 birth rates, while the percent African American and the poverty rate are no longer associated with the outcome. The labor force participation rate still predicts to higher teen birth rates, and public funding for abortion (which was not in our base model) is marginally associated with lower birth rates. Other than public funding for abortions, none of the policy related measures predict 1990 black teen birth rates.

Neither family planning policy measure significantly predicts 1990 African American teen birth rates, even after controlling for the level of teen fertility in 1985 and demographic factors such as labor force participation and rates of crime. The female labor force participation rate is the only demographic or policy measure that significantly predicts to higher 1990 birth rates for African Americans, while the education level is the only measure significantly associated with lower birth rates. As we observed for whites, the strongest predictor of 1990 birth rates for African American teens is the prior teen birth rate in 1985.⁵

Our racial comparisons reveal that family planning policy has no significant effect on black teen birth rates in 1990, while mixed effects are observed for whites. On the other hand, birth rates in 1985 are strong predictors of 1990 teen birth rates for both blacks and whites. The sociodemographic measures that affect 1990 teen birth rates are different for blacks and whites, with the exception of the female labor force participation rate, which significantly predicts higher 1990 teen birth rates for both

⁵As we did for whites, we examined the relationship between family planning policy and changes over time in the black teen birth rate. We found no significant association between changes in family planning funding and service delivery and changes in birth rates for blacks.

black and whites. While voting behavior, the crime rate, and AFDC payments predict white birth rates in 1990, the only measure, other than the 1985 birth rate and the female labor force participation rate, that consistently predicts black teen birth rates is the education level of the population.

Tables 7-9: Teen Pregnancy Rates in 1988

Tables 7 through 9 present multivariate models assessing the effect of family planning variables on the 1988 teen pregnancy rate. The 1988 teen pregnancy rate is used because this is the most recent year for which data are available. We do not analyze pregnancy rates separately by race due to insufficient data.⁶ In each table, the base model includes the primary independent variables of interest (percent teens at risk served at Title X clinics and public dollars spent on contraceptive services per woman at risk), and a basic set of sociodemographic measures. Additional models control for prior teen pregnancy rates and the same set of family planning and policy variables as were included in the models for teen birth rates.

Multivariate results for Tables 7 through 9 are fairly consistent. For example, in our base model, where prior pregnancy rates are not controlled, the percent voting for president in 1988 has a strong negative association with teen pregnancy rates, and the violent crime rate has a significant and positive relationship with pregnancy rates. However, once prior pregnancy rates are controlled, the effect of the percent voting variable disappears. The violence rate, on the other hand, remains a positive and significant predictor of higher teen pregnancy rates. Neither measure of family planning service availability is related to the teen pregnancy rate.

⁶See Methods Chapter for a more detailed explanation.

Once 1985 teen pregnancy rates are controlled, a few changes in our models emerge. The female unemployment rate is both negatively and significantly related to the 1988 teen pregnancy rate; that is, higher unemployment among females is related to lower teen pregnancy rates. Public funding for abortion shows a marginally positive association with the teen pregnancy rate as well, but the primary family planning policy variables are still unrelated to 1988 teen pregnancy rates. However, a policy variable identifying states that have coordinated pregnancy prevention programs is significantly associated with lower teen pregnancy rates. The unstandardized beta for this variable is -7 ; that is, a state with a coordinated pregnancy prevention program is found to have 7 fewer pregnancies per 1000 teens than a state without such a program.⁷

Tables 10-12: Teen Abortion Rates in 1988

As with teen pregnancy rates, teen abortion rates are measured in 1988 because this is the most recent year for which the data are currently available, and our analyses are not run separately by race due to insufficient data. Tables 10 through 12 present models in the same way we have done in earlier tables; our base models contain contextual and demographic measures, but do not control for earlier abortion rates; the subsequent models add the 1985 teen abortion rate into the models as a control variable.

Table 10--All Races 15-19, 1988 Abortion Rates: Models with Percent of Teens at Risk Served at Title X Clinics in 1987

⁷We also constructed a measure indicating states that had a pregnancy prevention program and were in the top third of all states in the percent of teens at risk who were served. This measure did not seem to contribute to the predictive value of the measure of pregnancy prevention programs.

Our base model (Model 7c) assesses the effect of teen Title X family planning service utilization on abortion rates, without controlling for 1985 abortion rates. We note that the percent of teens at risk who are served at Title X clinics appears to have no relationship with 1988 teen abortion rates. As before, only a few of our independent measures influence abortion rates among teens. For instance, the percent of the population that is Hispanic is only marginally associated with higher abortion rates. However, public funding for abortions and the violent crime rate both significantly predict higher abortion rates. The rest of the measures (including average AFDC payment and education level) are not significantly associated with abortion rates prior to controlling for earlier abortion rates.

After we control for 1985 abortion rates, the female unemployment rate and public funding for abortion are the only two variables that consistently affect 1988 teen abortion rates. Female unemployment predicts to lower rates of abortion among teens, while public funding for abortion predicts to higher rates of abortion among teens. The rate of violent crime, which demonstrated a significant impact in our base model, is only marginally associated with higher teen abortion rates in 1988; in Model 14c it is not significantly related at all.⁸ The female unemployment rate, which we noted predicts 1988 teen abortion rates, is no longer a significant predictor when the male unemployment rate is added into the model (see Model 13c); neither the male nor the female unemployment rate is significantly related to 1988 abortion rates when they are in the model together. The percent Hispanic is no longer significantly related to 1988 abortion rates, and none of the remaining measures are significantly related to 1988 abortion rates. However, public funding for abortions remains a strong predictor of teen abortion rates.

⁸It is important to note that in Model 14c, only 47 states are included in the run because the minors' access to abortion variable is missing data for three states.

Table 11--All Races 15-19, 1988 Abortion Rate: Models with Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

Table 11 examines the impact of public dollars spent on contraceptive services among women at risk in 1987 on 1988 teen abortion rates. Our base model suggests that the amount of public dollars a state spends on contraceptive services per woman at risk is not significantly related to the 1988 abortion rate. In fact, few contextual measures influence the 1988 abortion rate among teens. The percent African American, the percent of the population that is fundamentalist, the average annual pay, and the average AFDC payment are unrelated to the 1988 teen abortion rate; the percent Hispanic and the percent graduating high school have only a marginally positive relationship with abortion rates; two measures, the violent crime rate and state funding for abortions, are again significantly associated with higher abortion rates. Measures reflecting stronger status for women and social cohesion, such as the female unemployment rate and the percent voting for president, both predict lower abortion rates for teens.

The patterns discussed above change after prior abortion rates are taken into consideration. For example, in models 14b, 12b, and 13b, we note that the percent Hispanic and the percent graduating high school lose their marginal influence on the abortion rate. In addition, the percent voting for president is no longer related to the 1988 abortion rate for teens. The female unemployment rate is still significantly associated with lower abortion rates, except when the male unemployment rate is in the model. In the presence of male unemployment, the female unemployment rate has no association with the 1988 abortion rate for teens. Public funding for abortion still predicts to higher abortion rates, as expected, and the violent crime rate is still associated with higher abortion rates. Measures such as

minors' access to abortion, average AFDC payment, and average annual income have no significant relationship with the teen abortion rate.

Table 12--All Races 15-19, 1988 Abortion Rate: Models with Percent of Teens at Risk Served at Title X Clinics in 1987 and Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

Table 12 assesses both the influence of teens served and public dollars spent on contraceptive services among women at risk on abortion rates among teens in 1988. In models containing both of these family planning policy variables, neither family planning policy variable predicts the 1988 teen abortion rate. The percent Hispanic also fails to influence the abortion rate, either before or after controlling for 1985 abortion rates. The percent casting a vote for President is negatively associated with the outcome, but once we control for prior abortion rates the effect of this measure disappears. The violent crime rate in a state is related to higher abortion rates before controlling for 1985 abortion rates. After controlling for the earlier abortion rate, the violent crime rate coefficient remains positive, and it fluctuates between being marginally significant ($p < .10$) and significant at $p < .05$ level.

Depending on whether male unemployment is in the model, the impact of the female unemployment rate on abortion rates is also significant. Prior to controlling for male unemployment, female unemployment is strongly related to lower abortion rates, both before and after controlling for the 1985 abortion rate. Once the male unemployment rate is considered, the female unemployment rate is no longer related to the abortion rate among teens, suggesting that the unemployment measures reflect the state of the local economy rather than women's economic opportunities. Public funding for abortions consistently predicts higher abortion rates, with or without the prior abortion rate control. On the other hand, whether or not a minor has unrestricted access to an abortion appears to have no effect on state teen abortion rates.

Overall, the family planning policy measures we have been able to locate or develop have little influence on teen birth, pregnancy and abortion rates; the exception is for white teens, where public dollars spent on contraceptive services among women at risk predicts lower teen birth rates among whites in 1990. Net of this effect, however, we find that the percent of teens at risk who are served at Title X clinics predicts higher 1990 birth rates. Because we had expected these measures to have a greater influence on fertility patterns, we conducted further analyses to attempt to understand how these measures were working, and to explore whether or not there were any problems with the measures themselves.

Tables 13-15: Replication of Singh Study--Effects of Family Planning Policy on 1980 Pregnancy, Birth and Abortion Rates

State-level analyses of family planning policy and contextual factors on adolescent fertility were conducted several years ago. In particular, Singh (1986) conducted analyses similar to those presented in this study in which 1980 birth rates were the dependent variable. We have found, since 1986, the U.S. teen birth rate has increased, while public funding and support for family planning has declined, and environmental conditions in which many teens live have worsened. It is important, therefore, to determine the reason for the limited influence of our family planning measures on fertility outcomes. In particular, is the limited influence of family planning measures due to true historical trends, or are our findings due to differences in data or study methodology? In Tables 13 through 15 we have replicated Singh's model as best as possible, and in Tables 16 through 21 we replicate (as best as possible) our analyses of 1990 birth rates for 1980 birth rates. We find we are able to closely replicate Singh's 1980 results and conclude that the weak 1990 results are not due to differences in data or methodology.

Table 13--1980 Pregnancy, Birth and Abortion Rates: Effects of Percent of Teens at Risk Served at Family Planning Clinics in 1979

Table 13 presents the coefficients for the family planning variable of interest, the percent of teens at risk who were served at family planning clinics in 1979. The numbers in parentheses show Singh's results for the same models. Model 1 examines the effects of the percent of teens at risk who were served on the 1980 teen pregnancy, birth and abortion rates, controlling for the percent poor, the percent African American, and the percent urban in each state. The percent of teens at risk served is associated with higher pregnancy rates for all races combined, and with higher pregnancy rates for whites; this family planning policy measure is not related to pregnancy rates for blacks. This measure is also unrelated to birth rates for either race or both races combined. The percent of teens served is associated with higher abortion rates for whites and for all races, but is unrelated to abortion rates for blacks. Our findings for 1980 are generally consistent with Singh's findings.

In Model 2, the 1970 teen birth rate is added to Model 1. Now the family planning policy variable is unrelated to pregnancy rates, except for whites, where it remains associated with a significantly higher pregnancy rate. The percent of teens served is also strongly related to lower birth rates for whites and for all races combined, but is still not significantly associated with black birth rates. As in Model 1, the percent of teens at risk who are served is associated with higher abortion rates for whites and for all races, and is unrelated to abortion rates for blacks. Again, our findings are generally consistent with Singh's results; the only exception is a minor difference in the effect of the family planning variable on the black birth rate. While Singh found a significant negative effect on the black birth rate, the coefficient in our results is negative, and close to Singh's in magnitude, but it is not statistically significant.

Table 14--1980 Pregnancy, Birth and Abortion Rates: Effects of Public Dollars Spent on Contraceptive Services per Woman at Risk in 1979

The models in Table 14 present analyses of our second family planning policy variable, the total public dollars spent on contraceptive services per woman at risk. Singh did not do analyses using this measure, but we use her analysis model to examine the effects of this measure on teen pregnancy, birth and abortion rates. Model 1 presents the effects of public dollars spent on the teen pregnancy, birth and abortion rates, controlling for percent poor, percent African American and percent urban. This family planning policy measure has no effect on 1980 pregnancy or abortion rates for any race. The public dollars spent on contraceptive services are associated with higher birth rates for blacks, but are unrelated to birth rates for whites or for all races combined. Model 2 controls for the 1970 teen birth rate in addition to the controls in Model 1. The results are exactly the same; public dollars spent on contraceptive services are related to higher black teen birth rates in 1980, but are unrelated to white teen birth rates, or to teen pregnancy or abortion rates for any race.

Table 15--1980 Pregnancy, Birth and Abortion Rates: Effects of Percent of Teens at Risk Served at Family Planning Clinics and Public Dollars Spent on Contraceptive Services per Woman at Risk in 1979

Models 1 and 2 in Table 15 are the same as in Tables 13 and 14, but with both family planning policy variables in the same model. Before controlling for 1970 birth rates, we see that the percent of teens served is related to higher pregnancy rates for whites and for all races combined, but is not associated with black teen pregnancy rates. The percent of teens at risk served is not related to birth rates for any racial group; it is associated with higher abortion rates for whites and all races, but is not related to abortion rates for blacks. The public dollars spent on contraceptive services is associated with lower teen pregnancy rates for whites, but is unrelated to teen pregnancy rates for blacks or for all races

combined. Public dollars spent on contraceptive services is related to higher black birth rates, while it is not associated with birth rates for whites or for all races. This family planning policy measure is unrelated to abortion rates for any group.

After controlling for 1970 teen birth rates, the percent of teens served is still associated with higher pregnancy rates for whites and for all races, and remains unrelated to black pregnancy rates. The percent teens served is now related to lower birth rates for both racial groups, and it remains associated with higher abortion rates for whites and for all races together. The public dollars spent on contraceptive services has the exact same results in Model 2 as it did in Model 1; it is negatively associated with white teen pregnancy rates, and positively associated with black teen birth rates; the measure is not related to teen abortion rates for either racial group.

Tables 16-18: White Teen Birth Rates in 1980

In addition to replicating Singh's study above, we decided to further explore the effects of family planning policy variables on 1980 birth rates. Tables 16 through 21 expand the models above by adding various contextual, demographic and policy measures. These models are as similar as they can be to our analyses of birth rates in 1990. Some differences were inevitable, since data were not always available in the same form for 1980 as they were for 1990. For example, for 1990 birth rates the best measure of family planning clinic utilization that we could locate was a measure of the percent of teens at risk served at **Title X** clinics (in 1987), while for 1980 birth rates data were available for the percent of teens at risk served at all family planning clinics (in 1979).

Table 16--Whites 15-19, 1980 Birth Rates: Models with Percent of Teens at Risk Served at Family Planning Clinics in 1979

Models 5a and 5c do not control for the 1970 birth rate; in these models the percent of teens at risk who are served in family planning clinics has no relationship to 1980 teen birth rates. The percent Hispanic and the percent fundamentalist are strongly associated with higher teen birth rates for whites. The female unemployment rate is marginally related to higher teen birth rates in 1980 in Model 5a, with 40 states in the model⁹; once most of the states are in the model in 5c (n=48), the female unemployment rate is no longer associated with the outcome. In Model 5c, the violent crime rate is marginally related ($p < .10$) to the birth rate. The percent of whites who graduate college in a state is related to lower birth rates. The remaining measures are unrelated to the white teen birth rate.

Once the 1970 birth rate is controlled for, shown in Models 6c and 6d, the percent of teens at risk who are served is still unrelated to the teen birth rate. The percent of the population that is Hispanic and the percent fundamentalist are both still strongly related to higher birth rates in 1980. The violent crime rate and the percent graduating college are both marginally related to lower birth rates, and the rest of the measures are not associated with the outcome. As found for 1990, the prior birth rate is a strong predictor of the 1980 white teen birth rate.

Table 17--Whites 15-19, 1980 Birth Rates: Models with Public Dollars Spent on Contraceptive Services per Woman at Risk in 1979

In Table 17, two versions of the variable measuring public dollars spent on contraceptives are used. One version has missing data for ten states, while the second version assigns a value of zero to the component of public dollars that was missing for those ten states, in order to maximize the number of states in our models.¹⁰ In Model 3a, the first version of the family planning variable is used (with

⁹Minors' access to abortion is missing data for eight states.

¹⁰See Chapter 2 for a more detailed description of the two versions of this variable.

ten states missing data), and minors' access to abortion is in the model, which also has missing data on an additional eight states. The total number of states in Model 3a, therefore, is 33. In this model, the percent of the population that is Hispanic and the percent that is fundamentalist are both associated with higher teen birth rates, and the female unemployment rate is marginally related to a higher birth rate. The percent of whites who are college graduates and the violent crime rate both predict lower teen birth rates in 1980, and minors' access to abortion is marginally associated with lower birth rates. The family planning policy measure, public dollars spent on contraceptive services, is unrelated to teen birth rates in 1980.

Model 3c uses the second version of the family planning policy variable; 40 states are represented in this model. With seven more states in the model, the positive relationships between the percent Hispanic and the birth rate, and the percent fundamentalist and the white teen birth rate in 1980, did not change. However, the percent who are college graduates and the violent crime rate have a marginally negative association with the 1980 white teen birth rate. The female unemployment rate becomes significantly related to higher birth rates, but minors' access to abortion has no significant association with the outcome. The public dollars spent on contraceptive services is still unrelated to the 1980 birth rate for white teens. In Model 3e we drop minors' access to abortion from the model, since this measure has missing data for eight states, and the sample size increases to 48. In this model, the level of public funding for contraceptive services still remains unrelated to teen birth rates in 1980. The percent Hispanic and the percent fundamentalist still predict higher teen birth rates, but the violent crime rate remains negatively and marginally associated with the white teen birth rate. The percent of whites who graduate college is once again significantly related to lower white teen birth rates, as was seen in Model 3a. The level of female unemployment is no longer related to the outcome, however, and the

remaining measures are not associated with white teen birth rates in 1980.

Models 4a, 4c and 4f control for 1970 white teen birth rates. Version 1 of the family planning policy variable (i.e., ten states have missing data) is marginally associated with lower birth rates, as is version 2 of the variable in Model 4c, with seven more states in the model. In Model 4f, however, with an additional eight states in the model, the measure of public dollars spent on contraceptive services is no longer significantly related to the birth rate. The percent of the population that is Hispanic and the percent fundamentalist are strongly associated with higher white teen birth rates in 1980, while the percent of whites graduating from college and the violent crime rate are marginally related to lower birth rates.

Table 18--Whites 15-19, 1980 Birth Rates: Models with Percent of Teens at Risk Served at Family Planning Clinics in 1979 and Public Dollars Spent on Contraceptive Services per Woman at Risk in 1979

Models 1a, 1c and 1e in Table 18 consider both family planning policy measures in the model, prior to controlling for the 1970 teen birth rate. In these models, neither the public dollars spent on contraceptives, nor the percent of teens at risk served is significantly associated with the 1980 birth rate. The percent of whites who are college graduates is negatively related to white teen birth rates, while the percent Hispanic and percent fundamentalist are related to higher birth rates. In addition, the violent crime rate is marginally related to lower birth rates. Minors' access to abortion has no effect on the 1980 teen birth rate for whites.

Models 2a, 2c and 2f control for the 1970 white teen birth rate. In Model 2a, with 33 states and version 1 of the measure of public dollars spent on contraceptives, both family planning measures are significantly associated with lower birth rates. In Model 2c, version 2 of the public dollars spent on contraceptive services is still related to lower birth rates; however, the percent of teens at risk who were

served at family planning clinics is now only marginally associated ($p < .10$) with lower birth rates. When 48 states are in the model (Model 2f), neither family planning variable maintains its significant relationship with the white teen birth rate. In all three models (2a, 2c, and 2f) the percent Hispanic and the percent fundamentalist are consistently associated with higher white teen birth rates. The violent crime rate is marginally significant in model 2a, with 33 states in the model; in Models 2c and 2f the crime rate is significantly related to lower birth rates. Neither public funding for abortions nor minors' access to abortion is significantly related to 1980 white teen birth rates.

Tables 19-21: Black Teen Birth Rates in 1980

Table 19--Blacks 15-19, 1980 Birth Rates: Models with Percent of Teens at Risk Served at Family Planning Clinics in 1979

Tables 19 through 21 show parallel models predicting 1980 black teen birth rates. Models 5a, 5c and 5d, our base models in Table 19, present the results of analyses prior to controlling for the 1970 black teen birth rate. The models have different sample sizes because of missing data problems consistent with those described for Tables 16 through 18.¹¹ Irrespective of missing data, none of the base models (5a, 5c and 5d) significantly predicts the black teen birth rate in 1980. The family planning variable, the percent of teens at risk served in 1979, has no significant effect on state level birth rates for black teens. In fact, the only measure that demonstrates an impact on the 1980 black teen birth rate is the percent fundamentalist; in Model 5c, the percent fundamentalist in the state is associated with higher teen birth rates among African Americans. Thus, the greater the proportion of fundamentalists in the state, the higher the birth rate among black teens.

¹¹See Chapter 2 for a more detailed description of missing data problems.

After controlling for 1970 teen birth rates, the models overall predict the 1980 birth rates among black teens. For example, the percent teens served at family planning clinics is related to lower teen birth rates; for every 10% increase in the proportion of at risk teens served, the black teen birth rate is predicted to decrease by about 6 to 7 births per 1000 teen girls. The percent of blacks who complete high school in a state, and the percent of the population who are poor are both related to higher birth rates in 1980, net of other variables in the model. The percent voting for president in 1980 is associated with higher birth rates in Models 6a and 6c, but is no longer significant in Models 6d and 6e when unemployment rates are not included in the model. The level of violent crime in a state is unrelated to 1980 black teen birth rates, at least in Models 6a and 6c; however, in Models 6d and 6e, where the unemployment rate is excluded from the model and the sample size is increased to 42, the crime rate demonstrates a negative association with the black teen birth rate. The percent fundamentalist is, again, related to higher birth rates only in Model 6c. Neither public funding for abortions nor minors' access to abortion is related to the 1980 black teen birth rates.

Table 20--Blacks 15-19, 1980 Birth Rates: Models with Public Dollars Spent on Contraceptive Services per Woman at Risk in 1979

Multivariate models assessing the impact of public dollars spent on contraceptive services among women at risk on black teen birth rates in 1980 are presented in Table 20. We note that due to missing data, the models in this table are not based on data from all 50 states (see Chapter 2 for more detailed explanation). Consistent with prior models, each model is run without and then with the 1970 birth rate in the model. Our base models indicate that family planning policy and other contextual measures have virtually no associations with 1980 birth rates for black teens. For example, in Model 3a, the percent of the population that is African American is significantly associated with lower birth rates, but the total

dollars spent on contraceptive services and the percent fundamentalist are only marginally related to higher birth rates. Once we control for the 1970 birth rate (see Model 4a), even these relationships disappear; the only measure that significantly predicts the 1980 black teen birth rate (when the sample size is 24) is the 1970 black teen birth rate.

Model 3c includes the version of the public contraceptive expenditure variable that imputes missing data (N=30 states). In this model, the public dollars spent on contraceptive services per woman at risk in 1979 is not significantly related to the 1980 black teen birth rate, nor is the percent of the population that is fundamentalist. The percent African American is marginally associated with lower birth rates, but none of the other measures are associated with the outcome; the model overall does not predict 1980 birth rates for black teens. After controlling for the 1970 birth rate (Model 4c), the model's predictive power is improved. In this model, we note the percent voting for president is significantly associated with higher birth rates for black teens, and the percent poor in 1979 is marginally associated with higher birth rates. The 1970 black teen birth rate remains the strongest predictor of the 1980 birth rate among black teens, while the remaining contextual measures still fail to predict 1980 black teen birth rates.

Model 3e is based on data from 37 states¹². Public expenditures on contraceptive services remain unrelated to the 1980 black teen birth rate. The percent fundamentalist and the percent voting for president are both marginally associated with higher birth rates, but no other measures demonstrate a significant relationship with the black teen birth rate. With the 1970 birth rate added into the model (Model 4e) few changes are observed; the percent voting for president becomes significantly related to

¹²The sample size was increased to 37 by dropping minors' access to abortion from the model, which had missing data, and had no significant effect on the birth rate in Models 3a, 4a, 3c or 4c.

higher birth rates, and the percent poor becomes marginally associated with higher birth rates, but the measure of public expenditures on contraceptive services still has no significant impact on black teen birth rates in 1980.

In base Model 3f (N=42 states¹³), the public dollars spent on contraceptive services among women at risk shows a significant and positive association with the teen birth rate, but none of the other measures in the model are associated with the outcome. In models 4f and 4g, where we control for the 1970 birth rate, the public dollars spent on contraceptive services per woman at risk still predicts to higher 1980 birth rates. In addition, the percent of African Americans who complete high school and the percent poor are also related to higher birth rates. None of the other measures in the model significantly predict 1980 black teen birth rates.

Table 21--Blacks 15-19, 1980 Birth Rate: Models with Percent of Teens at Risk Served at Family Planning Clinics in 1979 and Public Dollars Spent on Contraceptive Services per Woman at Risk in 1979

The layout of the models in this table is consistent with Table 20, but the impact of both family planning policy measures is assessed on the 1980 black teen birth rate. In Model 1a (N=24), the percent of teens served is not significantly related to 1980 black teens birth rates, but the public dollars spent on contraceptive services is marginally associated with higher teen birth rates. The percent of the population that is African American is negatively associated with the birth rate; that is, areas with a higher proportion of African Americans have a lower 1980 black teen birth rate. The percent fundamentalist is marginally related to higher birth rates. Controlling for earlier birth rates (see Model 2a) eliminates the effect of public expenditures for contraceptive services on adolescent fertility of black

¹³The sample size has now increased to 42 because we have dropped the black female unemployment rate from the model. This measure had missing data, and was not significant in any of the models where it was present.

teens. In fact, the only measure in this model that predicts 1980 black teen birth rates is the 1970 black teen birth rate.

With 30 states in the model (Model 1c), and prior to controlling for the 1970 birth rate, none of our contextual or family planning measures predict 1980 black teen birth rates. Model 2c shows results after the 1970 birth rate is considered. In the presence of 1970 black teen birth rates, the percent of teens at risk who were served is significantly associated with lower birth rates for blacks, while the percent voting for president and the percent poor predict higher birth rates. Also, the percent of blacks who graduate high school in each state is marginally but positively related to higher birth rates.

In Model 1e, the public dollars spent on contraceptive services (Version 2) the percent of the population that is fundamentalist, and the percent voting for president are all marginally associated with higher birth rates. After controlling for 1970 birth rates (Model 2e), the significant relationship between the public dollars for contraceptive services and the 1980 black teen birth rate has disappeared, the percent fundamentalist remains marginally significant, and the percent voting for president is now significantly associated with higher birth rates. The percent graduating from high school is now marginally related to higher birth rates. The percent poor is also related to higher birth rates, while the percent of teens at risk who are served at Title X clinics now predicts lower birth rates in 1980 for black teens.

In Model 1f, the public dollars spent on contraceptive services is associated with higher teen birth rates in 1980, but none of the other measures in the model have a significant association with black teen birth rates. In Models 2f and 2g, the public dollars spent on contraceptive services still predict higher birth rates, but the percent of teens at risk who were served predicts lower black teen birth rates.

The percent graduating high school and the percent poor are also associated with higher birth rates; public funding for abortions has no effect on 1980 black teen birth rates.

In summary, we find that our data and methods are comparable to those employed in earlier studies and yield comparable results. Little evidence is found that family planning funding or services affect white teen birth rates. However, the percent of teens at risk who were served by clinics in 1979 is related to lower birth rates among black teens. On the other hand, public funding, net of the number of teens served, is related to a higher birth rate among black teens. As was found for 1990, the largest, strongest, and most consistent predictor of 1980 teen birth rates is the 1970 teen birth rate. Clearly, little has interrupted the pattern in some states of high rates continuing over time.

Tables 22-24: White Non-Marital Teen Birth Rates for 15 to 17 Year Olds in 1990

Table 22--Whites 15-17, 1990 Non-Marital Birth Rate: Models with Percent of Teens at Risk Served at Title X Clinics in 1987

More than two-thirds of births to teens 15 to 19 occur outside of marriage. Among teens aged 15 to 17, 78 percent occur outside of marriage. Moreover, birth rates at ages 15 to 17 vary dramatically across states, ranging from 21 births per 1,000 females 15 to 17 in Minnesota and Vermont, to 60 births per 1000 females 15 to 17 in Mississippi (and 103 in the District of Columbia) (Moore, 1994). Thus, special consideration of the factors that account for this variation and for the impact of family planning on non-marital births to teens is warranted.

Table 22 presents the impact of the factors that account for this variation and for the percent of teens served on non-marital birth rates among white teens aged 15 to 17 in 1990. In our base model (1b), before we control for 1985 birth rates, we note that the percent of teens at risk who are served demonstrates a positive association with non-marital birth rates among white teens; the percent of the

population that is Hispanic is also related to higher non-marital birth rates. Conversely, minors' access to abortion is significantly associated with lower out-of-wedlock birth rates among younger teens. In our base model, none of the other contextual or policy measures have a significant influence on the 1990 non-marital white teen birth rate.

A different pattern, however, emerges when we take into account 1985 white teen birth rates (Models 2b-8a). For example, the percent of teens served does not have a significant effect on the non-marital birth rate after controlling for 1985 birth rates among white teens 15 to 19. Additionally, the percent fundamentalist now has a negative impact on the birth rate among unmarried white teens, while the average AFDC payment appears to have a positive effect on birth rates. However, the percent of the population that is Hispanic, and minors' access to abortion maintain the same influence on the birth rate that they did in the base model. Policy measures such as public funding for abortions and state pregnancy prevention policy do not significantly predict 1990 non-marital birth rates among younger white teens.

Table 23--Whites 15-17, 1990 Non-Marital Birth Rate: Models with Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

In Table 23 we assess the effects of the public dollars spent on contraceptive services on the non-marital birth rates among young white teens. The base model shows that prior to controlling for the 1985 non-marital birth rate, the measure of public dollars spent on contraceptive services has no significant impact on the 1990 non-marital birth rate among white teens 15 to 17. We observe that the percent of the population that is Hispanic predicts higher out-of-wedlock birth rates, while minors' access to unrestricted abortion is only marginally associated with lower rates. The remaining contextual measures are unrelated to the white non-marital teen birth rate.

When we add the 1985 teen birth rate for whites to the base model, we find that the measure of public dollars spent on contraceptive services now significantly predicts lower non-marital birth rates among younger white teens in 1990. In fact, for every additional one hundred public dollars spent per woman at risk, a decrease of 11 non-marital births per 1000 females aged 15 to 17 is predicted. The percent of the population that is Hispanic is also associated with a higher number of out-of-wedlock births, while the measure of the percent fundamentalist has a significant negative effect on the non-marital teen birth rate for whites. The white teen poverty rate predicts lower birth rates as well, although it is only marginally significant in some models. We also note that the typical AFDC payment for a family of three significantly and positively influences the 1990 non-marital white teen birth rate, and that state policy on pregnancy prevention programs has a marginally positive association with higher birth rates. Minors' access to abortion, public funding for abortion, and state policy on sex education in schools do not have significant effects on the 1990 non-marital birth rate among younger white teens.

Table 24--Whites 15-17, 1990 Non-Marital Birth Rate: Models with Percent of Teens at Risk Served at Title X Clinics in 1987 and Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

Table 24 examines the influence of our policy and demographic measures on the white non-marital teen birth rate when both primary family planning policy measures are in the models. The findings presented here are mostly consistent with analyses done with each family planning policy measure in the model separately. For example, the percent of the population that is Hispanic is a strong predictor of higher 1990 out-of-wedlock birth rates among white teens, regardless of whether or not the 1985 birth rate is in the model. Our base model also shows that the percent of teens at risk who are served at Title X clinics has a significant positive impact on the non-marital birth rate, while the public measure of expenditures on contraceptive services has a marginally significant negative effect on the non-marital birth rate. However, once the 1985 non-marital birth rate is controlled in the models, the percent of teens served has no significant relationship with the 1990 non-marital birth rate for white teens. On the other hand, the measure of public dollars spent now has a strong negative influence on the non-marital birth rate among white teens in 1990. In fact, for every one hundred dollar increase in public dollars spent on contraceptive services, our results predict a decline of 13 non-marital births per 1000 white females aged 15 to 17.

Among the other demographic and policy measures we examined, the percent fundamentalist and the white teen poverty rate predict lower out-of-wedlock birth rates, while the average AFDC payment is related to higher non-marital birth rates. Minors' access to abortion and public funding for abortions are not significantly related to 1990 teen non-marital birth rates, but state policy on pregnancy prevention programs is marginally related to higher non-marital birth rates among white teens.

In comparing the effects of contextual, demographic and policy measures on non-marital white birth rates among 15 to 17 year olds in 1990 to the effects of these measures on birth rates among white teens 15 to 19 in 1990, we note that some of the policy measures have consistent effects, while other

measures, mostly demographic variables, have impacts on total white teen birth rates at ages 15 to 19 that are different from those observed for non-marital teen birth rates at ages 15 to 17. Most importantly, the measure of public dollars spent on contraceptive services has a significant negative influence on both non-marital and total birth rates for white teens. The magnitude of the effect of this measure is similar for both outcomes; that is, for every additional one hundred public dollars spent per woman at risk, we predict a decrease in the white teen birth rate of about 16 births per 1000 teens, and a decrease in the white non-marital teen birth rate of about 13 non-marital births per 1,000 white teens. The prior birth rate, as expected, is the strongest predictor of both total teen birth rates and non-marital teen birth rates in 1990 among whites. Finally, the monthly AFDC payment predicts higher total teen birth rates and higher out-of-wedlock teen birth rates for whites in 1990.

One of the differences that emerges in our models is the effects of the percent of the population that is fundamentalist; the percent fundamentalist has a negative effect on non-marital birth rates among younger white teens, as we would expect due to the strong discouragement of pre-marital sex among fundamentalist religions. However, the percent fundamentalist did not have a significant effect on total teen birth rates among whites; this may reflect the greater likelihood of early marriages and childbearing among fundamentalist populations. The percent of the population that is Hispanic predicts higher non-marital birth rates among young white teens, but has no significant effect on white birth rates for all teens 15 to 19. Minors' access to abortion has no effect on the total white teen birth rate, but it has a marginal association with non-marital birth rates for 15 to 17 year olds; this too is understandable since 15 to 17 year olds are the group affected by a restriction on access to abortion among minors.

Other demographic and contextual measures had significant effects on white teen birth rates, while having no significant relationship to non-marital rates among white teens. For example, the

female labor force participation rate and the violent crime rate predict higher white teen birth rates and the percent voting for president in 1988 predict lower white teen birth rates, but these measures do not significantly predict non-marital births among white teens ages 15 to 17 in 1990.

Tables 25-27: Black Non-Marital Teen Birth Rates for 15 to 17 Year Olds in 1990

Table 25--Blacks 15-17, 1990 Non-Marital Birth Rate: Models with Percent of Teens at Risk Served at Title X Clinics in 1987

Table 25 examines the effects of demographic measures and the percent of teens at risk served at Title X clinics on black non-marital teen birth rates for 15 to 17 year olds in 1990, paralleling Table 22 for white teens. Our base model (1b), presenting results before the 1985 black teen birth rate is controlled, shows that our family planning policy measure has no significant impact on the 1990 out-of-wedlock birth rate for black teens. However, both the female labor force participation rate and the black teen poverty rate predict higher non-marital black birth rates, and the violent crime rate has a marginal and positive impact on the non-marital birth rate among black teens in 1990. The percent of blacks who completed at least some college in a state has a marginally significant association with a lower non-marital birth rate, but the remaining measures are not significantly associated with 1990 black birth rates among unmarried teens.

After controlling for the 1985 black teen birth rate, the percent of teens at risk who are served at Title X clinics is still not significantly related to the 1990 non-marital birth rate. Both the percent completing some college and public funding for abortions significantly predict lower teen non-marital birth rates, while the percent voting for president in 1988 has a significantly positive relationship to the non-marital black teen birth rate. In addition, the violent crime rate is marginally associated with higher out-of-wedlock black birth rates. Neither the female labor force participation rate nor the poverty rate

is significantly related to the non-marital teen birth rate once the 1985 teen birth rate has been added to the base model. Other than public funding for abortions, none of the state policy measures significantly predicts 1990 black non-marital teen birth rates.

Table 26--Blacks 15-17, 1990 Non-Marital Birth Rate: Models with Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

In Table 26 we parallel our analyses in Table 25, replacing the percent of teens at risk served with the measure of public dollars spent on contraceptive services per woman at risk. In the base model, the amount of public money spent on contraceptive services per woman at risk in 1987 does not have a significant effect on 1990 out-of-wedlock black teen birth rates for 15 to 17 year olds. However, contextual measures including the female labor force participation rate, the violent crime rate, and the black teen poverty rate all significantly predict higher 1990 birth rates for unmarried black teens when the earlier birth rate is not included in the model. In addition, the percent of African Americans completing at least some college has a marginally significant negative relationship with out-of-wedlock teen birth rates among African Americans in 1990.

In models 10b through 16a, after controlling for the 1985 teen birth rate, we observe that now the female labor force participation rate, the poverty rate, and the violent crime rate are no longer significantly related to the non-marital teen birth rate for blacks. However, the percent completing some college is now a strong predictor of lower birth rates, and the percent voting for president is significantly associated with higher non-marital birth rates. Public funding for abortions varies between being marginally related and significantly related to lower 1990 teen non-marital birth rates. The public dollars spent on contraceptive services is marginally related to lower birth rates in some models, and it is non-significant in other models.

Table 27--Blacks 15-17, 1990 Non-Marital Birth Rate: Models with Percent of Teens at Risk Served at Title X Clinics in 1987 and Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

Simultaneous assessments of the two available family planning measures are presented in Table 27. In Model 17b, our base model, neither family planning policy measure is significantly related to the black non-marital teen birth rate. The female labor force participation rate and the teen poverty rate are both significantly associated with higher birth rates, and the violent crime rate is marginally related to higher birth rates. The percent of blacks who complete at least some college is marginally related to lower 1990 non-marital birth rates for black teens. Once the prior birth rate is controlled, the impact of the female labor force participation rate and the poverty rate on the non-marital black teen birth rate disappears. The violent crime rate is still marginally associated with higher non-marital fertility, and the percent voting for president emerges as a significant predictor of higher non-marital black birth rates. Public funding for abortions and the percent completing some college predict lower out-of-wedlock birth rates among black teens, and the public dollars spent on contraceptive services is marginally related to lower non-marital birth rates as well. None of the state policy measures on sex education and pregnancy prevention are significantly related to 1990 black teen non-marital birth rates.

The effects of the demographic and policy measures on the 1990 non-marital black teen birth rate are mostly consistent with the effects of these measures on the black teen birth rate (Table 6 summarizes these findings). As was noted for white non-marital and total teen birth rates, the strongest predictor of both black birth rates is the 1985 black teen birth rate. The percent of blacks completing some college has a negative impact on non-marital and total teen birth rates for blacks. The other consistent pattern that emerged was that the family planning policy variables failed to predict out-of-wedlock or total teen births for blacks in 1990, although total funding predicts lower non-marital fertility among black females aged 15-17 at a marginal level of statistical significance.

Table 28: White Birth Rates for 20-24 Year Olds in 1990

Models 1b-3a--Whites 20-24, 1990 Birth Rate: Models with Percent of Teens at Risk Served at Title X Clinics in 1987

Our analyses up to this point have focussed on fertility outcomes for teens. Table 28 begins an examination of the impact of contextual and family planning policy measures on fertility among white women aged 20 to 24.

The purpose of these analyses is, given the weak effects found of family planning services and expenditures on the fertility of teenagers, to explore whether these indicators of family planning availability are associated with fertility rates among older women. While it would be preferable to examine the rate of unplanned childbearing rather than total birth rates, state-level measures for such a variable are not available. Consequently we examine the birth rates by race for females 20 to 24 and 15 to 44.

Model 1b serves as the base model in Table 28; we observe that the percent of teens at risk who are served at Title X clinics (a proxy for service availability) is associated with higher birth rates for white women between the ages of 20 and 24. In addition, the percent fundamentalist, the female labor force participation rate, the percent of whites with at least some college, and the percent below 100% of poverty are all significantly related to higher birth rates prior to controlling for 1985 birth rates among whites 20 to 24 years old. Minors' access to abortion predicts to lower birth rates for white 20 to 24 year olds in the base model, presumably as a reflection of the availability and acceptability of abortion in the state.

Models 2b and 3a show the results of our analyses after we control for 1985 white birth rates. In Model 2b the percent teens served still significantly predicts lower birth rates among 20 to 24 year olds, but in Model 3a, the statistical significance of this relationship diminishes ($p < .10$). Other

measures also have a weaker association with birth rates for white women. The relationship between the proportion of the white population with a college education and the birth rate is marginally significant and negative, the opposite of what it was in Model 1b. The percent fundamentalist is significantly related to higher white birth rates in Model 2b, but has a weaker effect in Model 3a; public funding for abortions and average AFDC payments are also marginally related to higher birth rates. After controlling for the 1985 birth rate, the percent voting for president is related to lower birth rates among 20 to 24 year old white women.

Models 4b-6a--Whites 20-24, 1990 Birth Rate: Models with Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

Public expenditures on contraceptive services, unlike our first family planning policy measure, have no significant impact on birth rates for 20 to 24 year old white women. Even before the 1985 birth rate is controlled for (see Model 4b), public dollars spent on contraceptive services among women at risk are not significantly related to the 1990 birth rate for 20 to 24 year old whites. The percent of the population that is fundamentalist, the percent of whites who have completed at least some college, and the incidence of poverty among youth, on the other hand, are all significantly associated with higher white birth rates. The female labor force participation rate is marginally related to higher rates, while minors' access to abortion is marginally associated with lower birth rates. Once prior birth rates are controlled, however, many of the associations observed in the base model disappear. The percent fundamentalist, the female labor force participation rate, incidence of poverty among youth, and minors' access to abortion are no longer associated with the birth rate. The percent graduating college remains significant, but now demonstrates a negative impact on white birth rates; prior to controlling for the 1985 birth rate, it was associated with higher birth rates. The percent voting for president, which was

not significantly related to the white birth rate in the base model, shows a significant association with lower white birth rates. The average AFDC payment is marginally related to a higher white birth rate, and public funding for abortions is significantly associated with higher birth rates among white women in their early 20s.

Models 7b-9a--Whites 20-24, 1990 Birth Rate: Models with Percent of Teens at Risk Served at Title X Clinics in 1987 and Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

Models 7b, 8b and 9a examine the simultaneous influence of the two family planning policy variables on birth rates for young white women. Model 7b serves as the base model, prior to controlling for 1985 birth rates; Models 8b and 9a control for the prior birth rate. Several contextual measures show a significant influence on birth rates for white women in our base model. The percent of teens served at Title X clinics and the percent fundamentalist are significantly associated with higher white birth rates, both before and after controlling for earlier birth rates. The female labor force participation rate is significantly related to higher white birth rates in the base model, but once the 1985 birth rate is controlled for, it becomes only marginally significant in Model 9a and not significant at all in Model 8b. The percent of whites receiving at least some college education is associated with a higher birth rate before the 1985 birth rate is in the model; after the earlier birth rate is controlled for, the percent completing some college shows a significant negative impact on birth rates among young white women. In our base model, the percent voting for president is not significantly related to the white birth rate, but after controlling for 1985 white birth rates the percent voting for president in 1988 significantly predicts lower white birth rates. The teen poverty rate is positively and significantly related to white birth rates in the base model, but after controlling for 1985 birth rates the poverty rate is no longer a significant predictor of 1990 birth rates for white women 20 to 24. The average AFDC

payment is marginally associated with higher birth rates in Model 7b, and significantly related to higher birth rates in Model 8b. Public funding for abortions is also associated with higher 1990 birth rates, even after controlling for prior birth rates. The public dollars spent on contraceptive services is not significantly associated with 1990 white birth rates for 20 to 24 year olds.

Table 29: Black Birth Rates for 20-24 Year Olds in 1990

Models 1b-3b--Blacks 20-24, 1990 Birth Rate: Models with Percent of Teens at Risk Served at Title X Clinics in 1987

Table 29 examines the same models for black women 20 to 24. Models 1b through 3b assess the impact of teen service utilization on the fertility of black women. In Model 1b, prior to controlling for 1985 birth rates, the percent of teens served is not significantly related to black birth rates; the female labor force participation rate significantly predicts higher black birth rates, and the teen poverty rate is marginally related to higher birth rates among young African American women. Overall the model does not predict well to 1990 birth rates for black women 20 to 24. Once 1985 birth rates are controlled for, the percent teens served still has no effect on birth rates; however, the percent of blacks with at least some college predicts lower birth rates among black women in their early twenties. Also, minors' unrestricted access to abortion, and public funding for abortions, as measures of abortion availability, both demonstrate a negative association with black birth rates. The female labor force participation rate is significantly related to a higher birth rate in Model 2b, but in Model 3b it does not significantly predict 1990 birth rates for black women 20 to 24.

Models 4b-6b--Blacks 20-24, 1990 Birth Rate: Models with Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

Models 4b through 6b present parallel assessments with public expenditures for contraceptive services. The base model (4b) does not significantly predict the 1990 birth rate for blacks 20 to 24 years of age. The only measure which is significantly related to the birth rate is the female labor force participation rate; higher participation in the labor force is associated with higher black birth rates. The poverty rate is marginally associated with higher black birth rates, with $p < .10$.

After the prior birth rate is controlled for, the models overall (Models 5b and 6b) do significantly predict the 1990 birth rate among young black women. The percent of blacks completing at least some college and public funding for abortion are both significantly related to lower birth rates, while minors' access to abortion is marginally related to lower birth rates. The percent voting for president in 1988 is marginally associated with higher birth rates in Model 5b, and reaches statistical significance in Model 6b. The labor force participation rate significantly predicts higher black birth rates in Model 5b, but after controlling for the prior birth rate, it is not significantly related to the black birth rate (Model 6b). The amount of public dollars spent on contraceptive services has no significant association with the 1990 black birth rate for 20 to 24 year olds.

Models 7b-9b--Blacks 20-24, 1990 Birth Rate: Models with Percent of Teens at Risk Served at Title X Clinics in 1987 and Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

In Models 7b through 9b we examine the relative impact of each family planning policy measure on the black birth rate for 20 to 24 year olds. In general, neither family planning policy measure is significantly associated with the 1990 black birth rate, either before or after controlling for 1985 rates. In fact, the base model does not significantly predict 1990 black birth rates. On the other hand, in later models (Models 8b and 9b) where we control for prior birth rates, the models do significantly predict

1990 birth rates for young black women. For example, the female labor force participation rate is associated with a higher black birth rate when earlier birth rates are not controlled; but once the prior birth rate is in the model, the labor force participation rate is significantly related to higher black birth rates (Model 8b), but unrelated to the black birth rate in Model 9b, where the incidence of AFDC receipt and public funding for abortions are controlled. The percent completing some college, minors' access to abortion and public funding for abortions show a negative association with birth rates after controlling for 1985 birth rates; all of these measures were unrelated to the outcome in the base model. The average AFDC payment is not significantly associated with birth rates for black 20 to 24 year olds in 1990.

Table 30: White Birth Rates for 15-44 Year Olds in 1990

Models 1b-3a--Whites 15-44, 1990 Birth Rate: Models with Percent of Teens at Risk Served at Title X Clinics in 1987

Tables 30 and 31 present findings of multivariate models assessing the impact of family planning and contextual measures on the birth rates for all women of reproductive age for whites and blacks respectively. Again, these models were estimated to check and confirm the generality of the results for teenagers.

We note in Model 1b (Table 3d), before controlling for the 1985 white birth rate, that the percent Hispanic, the percent fundamentalist, and the average monthly AFDC payment are all significantly related to higher white birth rates, while minors' access to abortion, a proxy for abortion availability, significantly predicts lower birth rates among white women. The percent of teens served at Title X clinics, as expected, is unrelated to the birth rate for women aged 15 to 44. The remaining measures have no association with the 1990 white birth rate in the base model. After controlling for

1985 birth rates, the percent Hispanic is still significantly related to higher birth rates for white women, but the percent fundamentalist is only marginally related to higher birth rates in Model 2b, and is not significantly related to the white birth rate in Model 3a. Minors' access to abortion is no longer significantly related to the birth rate, but the average AFDC payment and public funding for abortions are correlated with higher 1990 birth rates among white women of reproductive age.

Models 4b-6a--Whites 15-44, 1990 Birth Rate: Models with Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

Models 4b, 5b and 6a analyze the association of public expenditures for contraceptive services among women at risk on the birth rates of white women. In Model 4b (the base model) the percent Hispanic, the percent fundamentalist, and the average AFDC payment are, again, significantly related to higher birth rates, while minors' access to abortion is marginally associated with lower birth rates. The public dollars spent on contraceptive services has no significant association with white birth rates.

After controlling for prior birth rates (Models 5b and 6a), the percent Hispanic and the average AFDC payment remain significantly associated with higher white birth rates. The percent fundamentalist is marginally related to higher birth rates among white women in Model 5b, but its impact disappears in Model 6a. For reasons that are not clear, public funding for abortions is significantly related to higher birth rates, but the family planning policy measure is unrelated to the 1990 white birth rate.

Models 7b-9a--Whites 15-44, 1990 Birth Rate: Models with Percent of Teens at Risk Served at Title X Clinics in 1987 and Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

Not surprisingly, the family planning policy measures we analyze show no significant relationship with the birth rate for women ages 15 to 44, either before or after controlling for birth rates in 1985. The percent of the population that is Hispanic and the average monthly AFDC payment are related to higher white birth rates, both before and after 1985 birth rates are in the model. Other factors fail to show similarly consistent effects. For instance, the percent of the population that is fundamentalist is strongly associated with higher white birth rates, until the prior birth rate is controlled; the percent fundamentalist is marginally significant in Model 8b, and not at all significant in Model 9a. Minors' access to abortion is marginally associated with birth rates for white women before controlling for 1985 rates; after 1985 birth rates are controlled, minors' access to abortion is unrelated to the white birth rate. As noted in the other models in Table 30, public funding for abortion is a significant correlate of higher birth rates among white women. Since most white women over age 20 have access to private services, the lack of association between public funding and the overall white birth rate is unsurprising.

Table 31: Black Birth Rates for 15-44 Year Olds in 1990

Models 1b-3b--Blacks 15-44, 1990 Birth Rate: Models with Percent of Teens at Risk Served at Title X Clinics in 1987

Table 31 presents similar models for black women aged 15 to 44. In Model 1b, prior to controlling for the 1985 birth rate for black women 15 to 44, the percent of teens at risk who are served at Title X clinics is marginally related to lower black birth rates, while the percent of teens below the poverty line and the female labor force participation rate are significantly associated with higher birth

rates for blacks. The average AFDC payment is marginally related to higher birth rates, while minors' access to abortion is not significantly related to birth rates for black women.

After controlling for the 1985 black birth rate, the percent of blacks with at least some college is strongly associated with lower black birth rates, while the female labor force participation rate is strongly associated with higher birth rates among black women. The percent of the population that is African American is unrelated to the black birth rate in Model 2b, but is significantly related to lower birth rates in Model 3b, when the incidence of AFDC receipt and public funding for abortion are considered. The violent crime rate has a marginal association with higher black birth rates in Model 2b, and a significantly positive relationship to black birth rates in Model 3b. The poverty rate is significantly associated with higher birth rates for blacks in model 2b, but unrelated to the black birth rate in Model 3b. The average AFDC payment predicts to higher birth rates among black women of reproductive age, while minors' access to abortion predicts lower black birth rates in 1990; public funding for abortion is not significantly related to the black birth rate. The percent of teens at risk who were served in 1987, as a proxy for the availability of family planning services, is significantly associated with lower black birth rates in Model 2b, and marginally related to lower birth rates for black women in Model 3b.

Models 4b-6b--Blacks 15-44, 1990 Birth Rate: Models with Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

The amount of public dollars spent on contraceptive services per woman at risk is not significantly related to 1990 black birth rates, either before or after controlling for birth rates in 1985. The female labor force participation rate, on the other hand, is strongly related to higher black birth rates, both before and after controlling for prior birth patterns. The percent of blacks completing at

least some college is not related to the black birth rate, except in the presence of the 1985 birth rate, after which the measure exhibits a strong negative relationship with black birth rates. Similarly, the violent crime rate is not associated with birth rates for African American women when the 1985 birth rate is not in the model; once the prior birth rate is controlled for, the violent crime rate demonstrates a positive effect on black birth rates in 1990. The poverty rate is related to higher birth rates whether or not the prior birth rate is in the model (see Model 4b and Model 5b). However, in Model 6b, the poverty rate fails to demonstrate a significant effect on the 1990 black birth rate. It may be that the measure of the percent of households receiving AFDC is very similar to the measure of the poverty rate, so that when assessed simultaneously, the two measures may cancel each other's effects out. The average AFDC payment is marginally related to higher black birth rates in the base model (4b) and significantly associated with higher birth rates among black women in Model 5b, while minors' access to abortion is marginally related to lower black birth rates after controlling for 1985 births. Public funding for abortions is not significantly related to 1990 birth rates for 15 to 44 year old black women.

Models 7b-9b--Blacks 15-44, 1990 Birth Rate: Models with Percent of Teens at Risk Served at Title X Clinics in 1987 and Public Dollars Spent on Contraceptive Services per Woman at Risk in 1987

The percent of teens at risk who were served at Title X clinics in 1987, as a proxy for the availability of family planning services, is marginally related to lower birth rates among black women in 1990 (Model 7b), regardless of whether 1985 births rates are controlled. The female labor force participation rate and percent of black teens below 100% of poverty are both significantly associated with higher 1990 black birth rates in the base model; the average AFDC payment is marginally associated with higher birth rates among black women as well. Neither minors' access to abortion nor the public money spent on contraceptive services is related to 1990 black birth rates.

Models 8b and 9b show results after the 1985 birth rate has been taken into account. In the presence of 1985 birth rates, the female labor force participation rate remains strongly associated with higher birth rates for black women, and the poverty rate significantly predicts higher black birth rates (Model 8b). The poverty rate, however, is unrelated to the black birth rate in Model 9b, where the incidence of AFDC receipt is controlled. Similarly, the percent of teens at risk who were served is marginally associated with lower black birth rates in Model 8b, but has no significant relationship to the birth rate for black women in Model 9b. The percent of blacks completing at least some college, which was not significantly related to the black birth rate in the base model, is again strongly related to lower birth rates for blacks after controlling for earlier birth rates. The violent crime rate is marginally associated with the birth rate in Model 8b, but increases in strength in Model 9b. The typical AFDC payment is also associated with higher black birth rates, while minors' access to abortion is marginally related to lower birth rates for blacks. State funding for abortions is not significantly related to the 1990 birth rate among black women of reproductive age.

Table 32: Percent of Teen Pregnancies Ending in Non-Marital Births in 1988

Our last set of analyses examine the effects of family policy and contextual measures on three fertility related outcomes for teens in 1988: the percent of teen pregnancies ending in non-marital births, the percent of teen pregnancies ending in any birth, and the percent of teen pregnancies ending in abortions. A review of Table 32 indicates that the family planning policy measures available to us have no substantial association with the proportion of pregnancies that result in non-marital births. The effects of some of the contextual and policy measures differ depending on controls for earlier fertility patterns, while others maintain the same effects regardless of this control. For example, public funding

for abortions has a strong negative relationship with the percent of teen pregnancies resulting in non-marital births, both before and after controlling for 1985 birth rates. Similarly, the percent of the population that is African American and the percent of teens below 100% of the poverty line are both significantly and positively associated with the percent of teen pregnancies resulting in non-marital births in all of the models in Table 32. On the other hand, the percent who voted for president is only marginally associated with a higher percentage of teen pregnancies ending in non-marital births in the base model; in subsequent models it demonstrates a significant positive relationship to the percent of teen pregnancies resulting in out-of-wedlock births. It is also important to note that the amount of AFDC payments has no significant impact on the percent of teen pregnancies resulting in non-marital births.

Table 33: Percent of Teen Pregnancies Ending in a Birth in 1988

Models assessing the impact of family planning and contextual measures on the percent of teen pregnancies ending in a birth are presented in Table 33. In models where the birth rate in 1985 is not controlled, public funding for abortions is significantly and negatively related to the percent of teen pregnancies ending in a birth; that is, in states where there is some funding for abortions, a teen is more likely to terminate a pregnancy with an abortion. The percent of a state's population that is fundamentalist in 1980 also contributes to a higher percent of teen pregnancies ending in a birth in the base models, probably because most fundamentalist religions disapprove of abortion. The percent of women unemployed in 1987 and the teen poverty rate are also significantly and positively related to the likelihood of pregnancies resulting in births in the base models, while the violent crime rate in 1988 is

negatively related to the percent of teen pregnancies ending in a birth. Neither of the family planning policy variables have any significant effect on the percent of teen pregnancies ending in births.

After controlling for the prior birth rate in 1985, public funding for abortions still has a negative association with the percent of pregnancies ending in a birth. That is, in states where there is some public funding for abortion, teens are less likely to carry their pregnancies to term. The percent of a population that is fundamentalist has a much smaller effect on the pregnancy outcome than in the base models, although its impact is still positive and marginally significant. The percent of the population that is Hispanic and the percent African American now have significant and negative effects on the percent of teen pregnancies ending in births. The percent in the state who cast a vote for president in 1988 is positively related to teen pregnancies ending in births, and the unemployment rate is only marginally related to higher percentages of pregnancies ending in births (in Model 6a it is not significant, in Model 6b and 6c $p < .10$). Once we control for prior birth rates, the poverty rate and violent crime rate no longer significantly influence the percent of pregnancies ending in a birth. Neither AFDC payments nor family planning policy are significantly related to this pregnancy outcome.

Table 34: Percent of Teen Pregnancies Ending in an Abortion in 1988

In Table 34 we examine the effects of family planning and abortion policy, services, and contextual measures on the percent of teen pregnancies ending in an abortion. In the base models (1a, 1b and 2a), before controlling for the abortion rate in 1985, the percent of the population that is fundamentalist and the percent of women who are unemployed both have significant negative effects on the percent of teen pregnancies that result in abortions. That is, states with high percentages of fundamentalists and high female unemployment rates are likely to have teens that do not terminate their

pregnancies. AFDC payments have a marginally significant, positive effect on the percent of teen pregnancies ending in abortions. After adding a measure assessing whether the state provided public funding for abortion in the model, the percent of teens below the poverty level also has a significant negative effect on the outcome. The coefficient for AFDC payments becomes small and non-significant. Public funding for abortions, net of the other factors, is significantly and positively related to the percent of teen pregnancies that end in abortion. Neither family planning policy variable has a significant impact on the percent of pregnancies ending in abortion among teens.

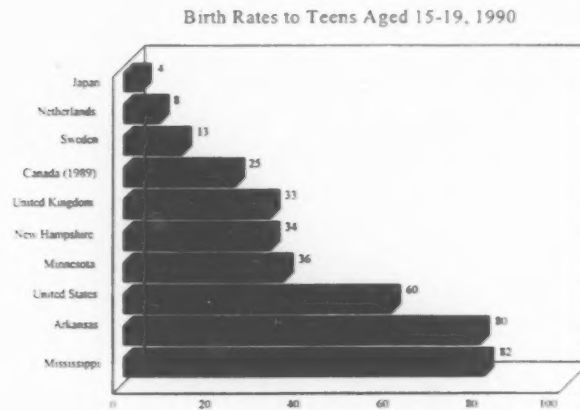
The patterns just described do not change drastically after controlling for the 1985 abortion rate. The percent fundamentalist and the percent women unemployed are still associated with a decreased percent of teen pregnancies ending in abortions. AFDC payments have no significant effect on the outcome, and public funding for abortions is now marginally related ($p < .10$) to the outcome. Controlling for abortion funding has the same effect on the poverty coefficient; poverty becomes negatively associated ($p < .10$) with the outcome only after abortion funding is in the model. Family planning measures have no effect on the percent of teen pregnancies that end in abortions.

CHAPTER 4: SUMMARY AND DISCUSSION

INTRODUCTION

Many changes occurred in the United States during the 1980s. One of these changes -- an increase in the teenage birth rate -- was quite unexpected and has been a source of concern both to the public and to policy makers at the state as well as the Federal level. U.S. teen birth rates are substantially higher than in other comparable industrialized democracies, where rates range from about 8 in the Netherlands and 13 in Sweden to 33 in Great Britain (see Figure 7). There is also considerable variation in the birth rate across the states in the United States, albeit across a higher range of rates. In 1990, for example, rates ranged from

Figure 7



34 in New Hampshire and 36 in North Dakota and Minnesota, to 82 in Mississippi and 80 in Arkansas. One might ask why U.S. birth rates among teens are so much higher than teen birth rates in other countries? In this study, we address a different question, however. Specifically, what factors are associated with this

extensive variation across states in rates of teen fertility? In particular, are there policy variables that predict lower or higher state birth rates?

To examine the differences in birth rates across the states in the United States, we have estimated multiple regression models on a series of measures of teen fertility, including the birth rate (births per 1,000 females in a state) among teens, the non-marital birth rate (births outside of marriage per 1,000 females in a state) among teens, the teen pregnancy rate (births plus abortions, per 1,000 females in a state), and the teen abortion rate (abortions per 1,000 females in a state). We also explored the percent of pregnancies ending in a non-marital birth, the percent of all pregnancies ending in a live birth and the percent of pregnancies ending in an abortion.¹⁴ Included in these regressions were not only measures of public policy, such as funding for contraception and abortion, but numerous measures of the social and economic characteristics of the states, included to control for the substantial contextual variation across states.

While the pattern of results is very complex, we do find that several policy variables have effects on fertility among teens. Funding for contraceptive services is related to lower teen birth rates among white teens and lower non-marital childbearing among teens 15 to 17. We also find abortion funding associated with a higher rate of abortion, a higher pregnancy rate, a higher proportion of pregnancies ending in abortion, a lower proportion of pregnancies ending in non-marital birth, and a lower non-marital birth rate among black teens. We also find higher AFDC benefit levels to be associated with a higher birth rate among white teens but not black teens. These analyses are reported in detail in Chapter 3 and are summarized in Table 35.

¹⁴In Chapter 3, we also report results for women 20-24 and 15-44 in 1990, and for teens 15-19 in the year 1980. Here we concentrate on results for teenagers in the years 1988 and 1990.

TABLE 35: SUMMARY OF REGRESSION RESULTS

VARIABLE NAME AND DESCRIPTION	White Birth Rate 15-19 1990 Table 3	Black Birth Rate 15-19 1990 Table 6	White Non-Marital Birth Rate 15-17 1990 Table 24	Black Non-Marital Birth Rate 15-17 1990 Table 27	Teen Pregnancy Rate 1988 Table 9	Teen Abortion Rate 1988 Table 12	% Teen Pregnancies Ending in Non-Marital Births, 1988 Table 32	% Teen Pregnancies Ending in Abortion, 1988 Table 34
% teens at risk served at Title X in 1987	↑	0	0	0	0	0	0	0
Public dollars spent on contraceptive services per woman at risk in 1987	↓	0	↓	↓	0	0	0	0
Minors' access to abortion, 1989/1987	0	0	0	0	0	0	--	0
Any public funding for abortions in 1990/1987? (1=yes)	0	↓	0	↓	↑	↑	↓	↑
White/Black/Total Birth Rates for 15- 19 year olds, 1985	↑	↑	↑	↑	--	--	0	--
Total Pregnancy Rate for 15-19 year olds, 1985	--	--	--	--	↑	--	--	--
Total Abortion Rate for 15-19 year olds, 1985	--	--	--	--	--	↑	--	↑
% population Hispanic in 1990	0	--	↑	--	0	0	0	0
% population African American in 1990	--	0	--	0	0	0	↑	0
% population fundamentalist in 1990	0	0	↓	0	0	0	↓	↓
Female labor force participation rate, 1989	↑	↑	0	0	--	--	--	--
% women unemployed 1987	--	--	--	--	↓	↓	0	↓
% men unemployed 1987	--	--	--	--	--	0	--	--
Proportion of whites/blacks with at least 1 year of college, 1990	0	↓	0	↓	--	--	--	--

Note: ↑ and ↓ denote results that are statistically significant at the .05 level; ↑ and ↓ denote results that are of marginal significance at the .10 level. -- denotes variables not included in a particular model.

The analyses presented in the previous chapter do not tell a simple and straightforward story. To summarize the results as simply as possible, we depict a representative sub-set of the models described in Chapter 3 in a single table (see Table 35). In each case, we present results from models that include both measures of family planning availability; these measures are: the percent of teens at risk of unintended pregnancy in 1987 served at a clinic that received funds through Title X of the Public Health Services Act, and a measure of public dollars spent on contraceptive services per woman at risk, also in 1987. In addition, all models include a measure of abortion policy and a control for prior fertility in the state.

In Table 35, the dependent variables measuring aspects of teen fertility are listed across the top, and the independent variables included as predictors of teen fertility are arrayed along the side. Thus, each column in Table 35 summarizes the results of a regression equation. For example, the first column heading is "White Birth Rate, 15-19, 1990." In the column below this heading, the factors included in regression models as predictors of the white teen birth rate are listed, along with the direction of any effects that were statistically significant predictors of the white teen birth rate.

The independent variables that were included in the various regressions are listed in the column on the far left, for example, the "% teens at risk served at Title X in 1987."

Each cell in Table 35 depicts the effect of that independent variable on the dependent variable in that column. If a variable was not included in a particular model, a dash is shown. If the variable was included, but it had no effect on the dependent variable, a zero is shown. If the variable had a positive effect, an arrow pointing upward is shown. Similarly, a downward pointing arrow indicates a negative effect of the variable.

Below we describe the effects of each independent variable on the set of dependent variables.

SUMMARY OF RESULTS

Percent teens at risk served at Title X in 1987. As reported in detail in Chapter 3, in virtually every regression model, before controlling for prior birth rates, the proportion of teens at risk of unintended pregnancy who were served at a clinic funded by Title X of the Public Health Service Act was found to be positively associated with teen fertility several years later in 1990. This is what one would expect if clinics are located in areas where the need is greater. When a measure of the prior birth rate is controlled, however, this association vanishes in every model except for one; a higher proportion of teens served continued to be associated with a higher birth rate among white teens. The importance of this single association is undermined, though, by the fact that the proportion of teens served is unrelated to the white non-marital teen birth rate. It seems unlikely that this variable should predict a higher total birth rate among white teens, but be unrelated to the non-marital birth rate among white teens. For every other fertility outcome, the proportion of teens served is unrelated to adolescent fertility. Thus we conclude that overall the proportion of teens at risk who are served in Title X clinics has little effect on teen fertility several years later, net of other characteristics of states.

Public dollars spent on contraceptive services per woman at risk in 1987. The measure of public funding for contraception, on the other hand, predicts lower teen birth rates in three of four birth rate models. Specifically, it predicts lower non-marital birth rates among young white and young black teens, and it predicts a lower white teen birth rate. However, it has no association with the black teen birth rate or with the pregnancy rate for all teens. In addition, among teens experiencing pregnancy, funding for contraception is, as one would expect, unrelated to the proportions in a state selecting any given pregnancy resolution (i.e. percent of pregnancies ending in a birth or an abortion).

TABLE 35: SUMMARY OF REGRESSION RESULTS

VARIABLE NAME AND DESCRIPTION	White Birth Rate 15-19 1990 Table 3	Black Birth Rate 15-19 1990 Table 6	White Non-Marital Birth Rate 15-17 1990 Table 24	Black Non-Marital Birth Rate 15-17 1990 Table 27	Teen Pregnancy Rate 1988 Table 9	Teen Abortion Rate 1988 Table 12	% Teen Pregnancies Ending in Non-Marital Births, 1988 Table 32	% Teen Pregnancies Ending in Abortion, 1988 Table 34
% graduated high school, 1990	--	--	--	--	0	0	0	0
% cast vote for President in 1988	↓	0	0	↑	0	0	↑	0
Violent crime rate in 1988	↑	0	0	↑	↑	↑	0	0
% white/black/all teens below 100% poverty, 1989	0	0	.	0	--	--	↑	↑
Average annual pay in 1987	--	--	--	--	0	0	--	--
% of households receiving AFDC, 1988	0	0	0	0	--	--	--	--
Typical AFDC payment for family of 3 in 1989/1987	↑	0	.	0	0	0	0	0
State policy for pregnancy prevention education in schools	0	0	0	0	0	--	--	--
Scale of pregnancy prevention education + policy on AIDS & STD education	0	0	0	0	0	--	--	--
State fund school-based clinics in 1988? (1=yes)	0	0	0	0	0	--	--	--
State have coordinated pregnancy prevention program in 1990/1985?	0	0	.	0	↓	--	--	--

Note: ↑ and ↓ denote results that are statistically significant at the .05 level; ↑ and ↓ denote results that are of marginal significance at the .10 level. -- denotes variables not included in a particular model.

Minors' access to abortion, 1989/1987. State laws restricting the availability of abortion to minor adolescents were not found to be related to teen birth rates, to abortion rates, or to pregnancy resolution.

Public funding for abortions in 1990/1987. Unlike restrictive laws, funding for abortion is related to numerous measures of adolescent fertility. The availability of public funding for abortion is associated with a lower birth rate among black teens, with a lower non-marital birth rate among young black teens, with a higher teen pregnancy rate, and with a higher teen abortion rate. Public funding is also related to a higher proportion of pregnancies ending in abortion and a lower proportion ending in non-marital birth.

Birth rates for 15-19 year olds, 1985. Prior fertility is included to control for the tendency to locate services in areas that have had high rates of teen fertility. As reported throughout Chapter 3, prior fertility is indeed a critical control variable: when this measure is included, the positive association between services provided and the teen birth rate becomes non-significant in nearly every model. The prior teen birth rate in a state is the strongest and most consistent predictor of the 1990 birth rate in a state. States with relatively high birth rates in the mid-1980s retained their relative position in the late 1980s.

Total pregnancy rate for 15-19 year olds, 1985. This variable is included as a control variable in the analysis of pregnancy rates, for the same reason that we control for the prior birth rate in analyses of teen birth rates; that is, to control for the fact that services to prevent teen pregnancy are logically located in areas with higher pregnancy rates. Therefore, one would expect a positive association between services and pregnancy rates, unless the level of pregnancy in an earlier year is statistically controlled. The most recent year for which pregnancy data are available is 1988, and we control for the prior pregnancy rate in 1985.

Because race-specific data are not available for every state, the total pregnancy rate is calculated for all race/ethnicity groups combined. This measure of the prior pregnancy rate is strongly predictive of the current pregnancy rate.

Total abortion rate for 15-19 year olds, 1985. The prior level of abortion in each state, for all races combined, is controlled in analyses in which abortion is the dependent variable. The prior abortion rate is, as one would expect, strongly predictive of the current abortion rate. In addition, the prior abortion rate is strongly predictive of the proportion of teen pregnancies that terminate in abortion as opposed to birth.

Percent population Hispanic in 1990. In the vital statistics system, Hispanic ethnicity is distinguished from race, and more than 90 percent of all Hispanics are defined to be white. Thus, data on births to whites include most Hispanic births. Nevertheless, the fertility patterns of Hispanic youth differ from those of non-Hispanic whites, and a variable was included in analyses of white teens to control for this fact. In the analysis of the white teen birth rate, this variable predicts a higher white rate, but the association falls from significance when the prior birth rate is controlled. However, it remains statistically significant in the analysis of the non-marital birth rate among 15 to 17 year old whites, with a higher proportion of Hispanics predicting a higher non-marital birth rate.

Percent population African American in 1990. States vary substantially in the proportion of the state population that is African American; however, this variation has no effect on birth rates that are race-specific. The proportion of pregnancies ending in non-marital births, which is calculated for teens of all races, however, is strongly related to the proportion of persons in a state who are African American.

Percent Population Fundamentalist in 1990. The proportion of the state population that is affiliated with a fundamentalist faith is, as expected, not related to a lower teen birth rate but related to a lower rate of non-marital childbearing among young white teens. A greater proportion fundamentalist also predicts to a lower proportion of pregnancies ending in a non-marital birth and a lower proportion ending in abortion.

Female Labor Force Participation Rate, 1989. This measure was included in analyses of the teen birth rate and the non-marital birth rate among young teens. A higher rate of participation in the labor force among women is significantly related to higher rates of teenage childbearing among both white and black teens; however, it is unrelated to rates of non-marital childbearing.

Percent women unemployed, 1987. Since pregnancy could only be assessed in 1988, and Census data were not available to include as control variables, the measure of labor force participation included in these models differs from the measure included in regressions on the 1990 birth rate. We find that a higher rate of unemployment among women predicts to a lower teen pregnancy rate. On the other hand, a higher rate of female unemployment in a state predicts to a lower abortion rate and to a lower propensity to abort given pregnancy.

Proportion of whites/blacks with at least 1 year of college, 1990. Although the proportion of college-educated white adults in the state population is unrelated to the fertility of white teenagers, both the black teen birth rate and the non-marital birth rate among young black teens are lower when a higher proportion of the black population in the state is college educated.

Percent graduated high school. Models estimating pregnancy rates and pregnancy outcomes in 1988 included a state-level measure of education in 1987 as an independent variable, the proportion of the state population who had completed high school. This variable is unrelated to the fertility of teens.

Percent cast vote for President in 1988. Varied proportions of residents in different states cast a vote in the 1988 Presidential election; a higher proportion voting is often regarded as an indicator of civic concern and efficacy. Interestingly, this proportion is related to a lower birth rate among white teens; however it is associated with a higher non-marital birth rate among young black teens. It is also associated with a higher proportion of teen pregnancies that terminate in non-marital births.

Violent crime rate in 1988. States with a higher rate of violent crime also experience a higher white teen birth rate, a higher black teen non-marital birth rate, a higher pregnancy rate, and a higher abortion rate.

Percent white/black/all teens below 100% poverty, 1989. Census data provide a measure of the incidence of poverty in each state. The detailed tables in Chapter 3 show that, in general, a higher incidence of poverty is associated with a higher level of teenage childbearing; however, the association becomes non-significant when other variables, particularly the prior birth rate, are added to the model. Net of other

variables, higher poverty in a state is related to a lower white non-marital birth rate, but a higher proportion of pregnancies ending in non-marital births and a lower proportion of teen pregnancies ending in abortion.

Average annual pay in 1987. To predict the teen pregnancy and abortion rates in 1988, a measure of the average pay for persons in the state was included in these models; but it had no effect net of other contextual and policy factors.

Percent of households receiving AFDC, 1988. A measure of the proportion of the state population with households receiving payments from Aid to Families with Dependent Children was included in models of 1990 birth rates, but it was not significant in any of the models.

Typical AFDC payment for family of 3 in 1989/1987. Larger AFDC payments in the state are found to be marginally associated with higher rates of teen childbearing among whites, and higher rates of non-marital childbearing among young white teens. However, this association only emerges when prior fertility is controlled. No associations are found with rates of childbearing among black teens, with the abortion rate, or with the proportion of pregnancies ending in either abortion or in non-marital birth.

State policy measures. A number of measures assessing the presence of state policy initiatives were included in various models. Detailed results are presented in Chapter 3; but the results can be summarized by noting that no effects were found for pregnancy prevention education in schools, for a variable indicating the presence of both pregnancy prevention education and a policy on AIDS and STD education, or for the presence of state-funded school based clinics. The absence of any associations may reflect the lack of

information regarding the intensity of these state initiatives. It may also reflect the tendency of states with more serious problems to be more willing to establish programs and policies. Such a tendency presumably explains the positive association between the white non-marital birth rate and the presence of a coordinated pregnancy prevention program in 1990, as there is no reason to assume a causal connection. However, the presence of such a program in 1985 is associated with a lower pregnancy rate in 1988.

Discussion

The policy variables that show clear effects in these analyses are those that measure funding. Public funding for contraceptive services and public funding for abortion are both related to teen fertility. Abortion funding has the strongest and most consistent set of findings. Specifically, in states that provide public funding for abortion, the black teen birth rate and the non-marital birth rate among young black teens are lower, the abortion rate is higher, the proportion of teen pregnancies ending in abortion is higher, and the proportion of teen pregnancies ending in non-marital births is lower. Public funding for contraception also has effects, being related to a lower white teen birth rate and a lower non-marital birth rate among young white and young black teens. However, funding for contraceptive services is not related to a lower pregnancy rate, while funding for abortion is associated with a higher pregnancy rate. The only policy variable to predict a lower state-level pregnancy rate is the presence of a state-level coordinated pregnancy prevention program.

The measure of teens at risk of unintended pregnancy in a state served by Title X clinics was not found to be associated with lower pregnancy or birth rates. It may seem surprising that the extent of coverage of services from a Title X clinic is unrelated to the teen birth rate, the teen pregnancy rate, and the teen abortion rate. This lack of association may reflect the fact that this variable ignores services provided

at any facility that does not receive funds through Title X of the Public Health Services Act. Since services may be available through agencies that are not Title X grantees, such as a private doctor who sees Medicaid patients or a city hospital that receives only state funds, this variable undoubtedly misses a lot of the services that are provided to teens. Moreover, since this variable assesses only the proportion of teens served and not the quality of the services received, it is possible that the lack of effect reflects low quality services provided in crowded clinics with diminished resources and harried staff. It is also possible, of course, that the proportion served among teens at risk has no effect because condoms became increasingly popular during the late 1980s, making clinic services less critical to preventing pregnancy. Finally, these results may reflect the substantial funding declines that occurred during the 1980s. We find that 37 states had declines greater than 50 percent in total public funding for contraceptive services per woman at risk, net of inflation.

The fact that the state-level measure of expenditures on contraceptive services per woman at risk predicts to lower teen birth rates, while the percent of teens at risk who are served has no effect, suggests that service quality may be the missing ingredient. The data suggest that greater proportions served has little effect, while greater funding per woman is related to lower fertility, net of other state-level characteristics.

One conclusion that is extremely clear is the importance of maintaining data on services, clients, and expenditures so that policy makers can assess the effectiveness of their investment. In the absence of good information on the independent variable of primary interest, family planning services, it is difficult to assess whether and how public expenditures on contraception for teens affects teen fertility.

Another unavoidable conclusion is the importance of abortion policy in affecting adolescent fertility in the United States. Since virtually no one recommends abortion as the policy of choice, the de facto

importance of abortion funding appears to result from the inadequacy of other approaches. The relative weakness of other policy indicators suggests that there is substantial room for additional effort.

Perhaps it is not surprising that the effect of state abortion funding outstrips the effect of funding for contraception. Given that public funding for family planning declined by a third between 1980 and 1990, while the proportion of teens having sexual intercourse continued to increase, perhaps what is most surprising is the fact that we do find an impact of public funding for contraceptive services on state-level teen birth rates.

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